Department of Veterans Affairs

One-VA Enterprise Architecture Program Management Plan: FY 2003

Version 1.0

June 11, 2003

Secretary's Vision for Enterprise Architecture

The Department of Veterans Affairs will be recognized as the leader in Enterprise Architecture within the Federal government. We will continuously benchmark the quality and delivery of our service with the best available and use innovative means and high technology to deliver world-class services to our Nation's veterans and their families, and our employees. As the entrusted stewards of veterans' information, we will ensure that only authorized personnel have access to veteran information and that our financial transactions are protected. Our highly skilled workforce of business and information technology professionals will be dedicated to ensuring that our Enterprise Architecture solutions are veteran-focused and developed in partnership with veterans groups and other organizations. Together, through our Enterprise Architecture, we will continuously strive to reach a higher standard in carrying out our vitally important mission.

Anthony J. Principi
Secretary of Veterans Affairs

Department of Veterans Affairs CIO Promulgation

As the Department of Veterans Affairs Chief Information Officer (CIO), I do hereby formally promulgate the One-VA Enterprise Architecture Program Management Plan and approve its use and execution across the Department. This plan defines the processes and approach that allow for the integration of Enterprise Architecture, Capital Planning and Budgeting, and Project Management Oversight processes of the VA. The One-VA EA Program Management Plan serves as the mechanism for formalizing the execution of the One-VA EA Program as a continuous improvement process, aligning integrated technology solutions with the business needs of the Department.

John A. Gauss, Ph.D.
Assistant Secretary for Information and Technology
VA Chief Information Officer

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1 Introduction

1.1 Background

The Clinger-Cohen Act of 1996 (Public Law 104-106) assigns the Chief Information Officer (CIO) with the responsibility to develop, maintain and facilitate the implementation of an enterprise architecture.

1.2 Purpose

This document establishes the One-VA Enterprise Architecture (EA) Program Management Plan (PMP). VA is approaching Enterprise Architecture as a continuous improvement process. This document defines the processes and approach that allow for the integration of Enterprise Architecture processes, Capital Planning and Budgeting processes, and Project Management Oversight processes of the VA. The One-VA EA Program Management Plan serves as the mechanism for formalizing the execution of the One-VA EA Program as a continuous improvement process, and as such, many of the processes established by this plan will repeat on a regular update cycle. This plan will also establish the One-VA EA compliance and enforcement processes and procedures.

In particular this document will formalize the following aspects of the One-VA Enterprise Architecture program:

- The plan delineates actions to develop, use, and maintain the EA including management control and oversight;
- The plan ensures that EA is clearly addressed in the capital planning and investment process;
- The plan ensures that processes are established that produce a coordinated, clear set of objectives and guidance for executing projects;
- The plan establishes clear compliance criteria and non-compliance consequences for executing projects;
- The plan documents the development processes and management practices for building the target EA products;
- The plan documents the development processes and management practices for creating the sequencing plan, and populating the EA repository;

- The plan documents the roles and responsibilities of the enterprise wide organizations such as the Enterprise Architecture Council (EAC), Enterprise Information Board (EIB), Strategic Management Council (SMC), and the allocation of functions to executing programs;

- The plan ensures that the continuous improvement process of review, validation, refinement and updates to the One-VA Enterprise Architecture is clearly documented;

- The plan documents the process that allows for the identification of gaps from the existing to the "Target" architecture.

1.3 Relationship of the EA-PMP to the VA Enterprise Architecture

The EA Program Management Plan is the mechanism for transforming the agency from the "As Is" to the "To Be" architecture. The EA PMP defines the management structure, control, and the set of management processes that drive the enterprise from the baseline to the target architecture.

1.4 Executive Summary of PMP

1.4.1 PMP Synopsis

The following list provides a brief description, where needed, of each of the chapters in this document.

Chapter 2: Motivation: The Need for a One-VA Enterprise Architecture. This chapter describes the need for the One-VA Enterprise Architecture and the alignment of IT investments with the business drivers, goals, and objectives.

Chapter 3: The One-VA Enterprise Architecture Program Environment. This chapter provides an overview of the structures (i.e., organization) and processes (i.e., activities) of overall VA governance, describes the structure and processes of VA's Enterprise Architecture governance and how it fits into overall VA governance.

Chapter 4: Information Technology Planning. This chapter defines the scope of the One-VA Enterprise Architecture from an overall perspective as the primary authoritative resource within the Department for enterprise IT. It also specifies the applicability of the One-VA EA for all IT projects to key processes across the Department including Capital Planning, Budgeting,

Project Management Oversight and the day-to-day execution of Information Technology projects.

Chapter 5: Information Technology Execution and Monitoring. This chapter discusses the One-VA Enterprise Architecture in relationship to Information Technology execution and monitoring processes. This includes milestone reviews, a project manager's perspective and compliance.

Chapter 6: Quality Management/Configuration Management. This chapter describes the processes required to ensure the program will satisfy the needs for which it was designed. Topics include quality planning, quality assurance and quality control.

Chapter 7: Risk Management. This chapter describes the steps/processes required to ensure that the probability and consequences of adverse events to project objectives are minimized. These processes include Risk Identification, Risk Assessment/Quantification, Risk Allocation and Risk Management.

2 Motivation: The Need for a One-VA Enterprise Architecture

2.1 One-VA Information Technology Architecture Aligned with Business Goals.

VA is committed to functioning as a unified department providing One-VA veteran customer centered delivery of service to our nation's veterans and their beneficiaries. The effective and efficient use of current and emerging technology in support of the VA's business operations will ensure that we meet the One-VA goal. The primary purpose of the One-VA EA is to *inform*, *guide* and *manage* the decisions of the enterprise, especially as they pertain to IT investments. The VA's EA mission is to "develop and implement an evolutionary, high-performance One-VA information technology architecture aligned with our program/business goals that enables enterprise-wide data integration."

The One-VA EA presents a planned approach to the development of information technology horizontally across the enterprise, which fosters coordination and integration, and is fundamentally driven by the veteran customer delivery of service and by the business needs of the enterprise. It fosters the evolution to a component and services orientation; an approach that facilitates easier, quicker responsiveness to changing business needs and advances in technology. This architecture identifies integration points and interdependencies between components that are driven by cross-functional business needs and executive management objectives. The One-VA EA is not a product or activity with a specific arbitrary end date; it is an ongoing continuous improvement activity intended to keep the VA's IT contemporaneous with the critical needs of the Department's mission.

2.2 VA Enterprise Architecture Mission, Goals, and Objectives

The mission of the VA's Enterprise Architecture is to develop and implement an evolutionary, high-performance One VA information technology architecture aligned with the VA program/business goals that enables enterprise-wide data and process integration.

The VA's Enterprise Architecture will enable the Department to provide an accessible source of consistent, reliable, accurate, useful, and secure information and knowledge to veterans and their families, our workforce, and stakeholders to support effective delivery of services and benefits, enabling effective decision-making and understanding of our capabilities and accomplishments. The Enterprise Architecture will support the VA's strategic goals.

The goals and objectives of the VA's Enterprise Architecture are to ensure that:

1. Veterans will feel that we know who they are, we will answer their questions about their issues, we will effectively provide end-to-end services without frustrating them, they will have access to our systems for their own needs, and they will believe that VA staff and systems are here to serve and honor them.

- Self-service by Internet and phone will be available to veterans, 24 hours a day, 7 days a week.

- Applications for benefits will be able to be submitted by veterans through the Internet.

- Telephone service and information centers will be enhanced to enable easy access to information and services.

- Kiosks will be installed to provide access to information about benefits and services.

2. The VA will implement a One VA information framework supporting cost-effective data integration and information sharing across program/business lines to provide a "single" source of consistent, reliable, accurate, timely, and secure information to veterans and their families, employees, and other stakeholders.

    - Veterans will never have to register with VA more than once.

    - Veteran information will be available anywhere, anytime, to any authorized user in real time.

    - Telemedicine use will be enhanced to improve timeliness and quality of care for veterans and maximize remote provider consultation.

    - Enterprise Architecture will foster the organization and presentation of all relevant patient data in a way that directly supports clinical decision-making and program analysis. Timely access to clinical information by VA staff from multiple sites of care is paramount to ensure prompt service, continuity, and quality care.

    - Common and core data will be shared by the VA's operating elements, ensuring accessibility and avoiding redundancy.

    - Sharing and use of information with the VA's external partners will be enhanced. The partners include: the Social Security Administration; the Department of Defense; Health and Human Services; and other federal, state, and local governments; educational institutions; lending institutions; and other program/businesses.

        - The VA information systems will be high-performance systems that meet or exceed exemplary standards in businesses and government agencies.

- Information systems characteristics will be adaptable, scalable, extensible, standards-based, open systems, maintainable, reliable, secure, component-based, common services oriented, best appropriate technology, veteran-connected, and principle-based.

The "gold standard" will be established for information related to veteran care and an "information supply chain" that clearly articulates ownership.

VA Goal 5 (E-1): Provide One-VA world-class service to veterans and their families through the effective management of people, technology, processes, and financial resources

The CIO's Information Technology goals that follow ensure that the Secretary's goals, especially the enabling goal, will be supported with innovative, disciplined and practical application of information technology.

IT Goal 1: Implement One-VA Enterprise Architecture.
IT Goal 2: Implement a One-VA data network.
IT Goal 3: Secure the One-VA enterprise against Cyber Attack.
IT Goal 4: Establish a disciplined, non-bureaucratic project management structure.
IT Goal 5: Establish effective metrics to measure performance.
IT Goal 6: Implement an effective Command and Control, COOP and COG infrastructure.
IT Goal 7: Shape the VA IT workforce to support the target One-VA EA.

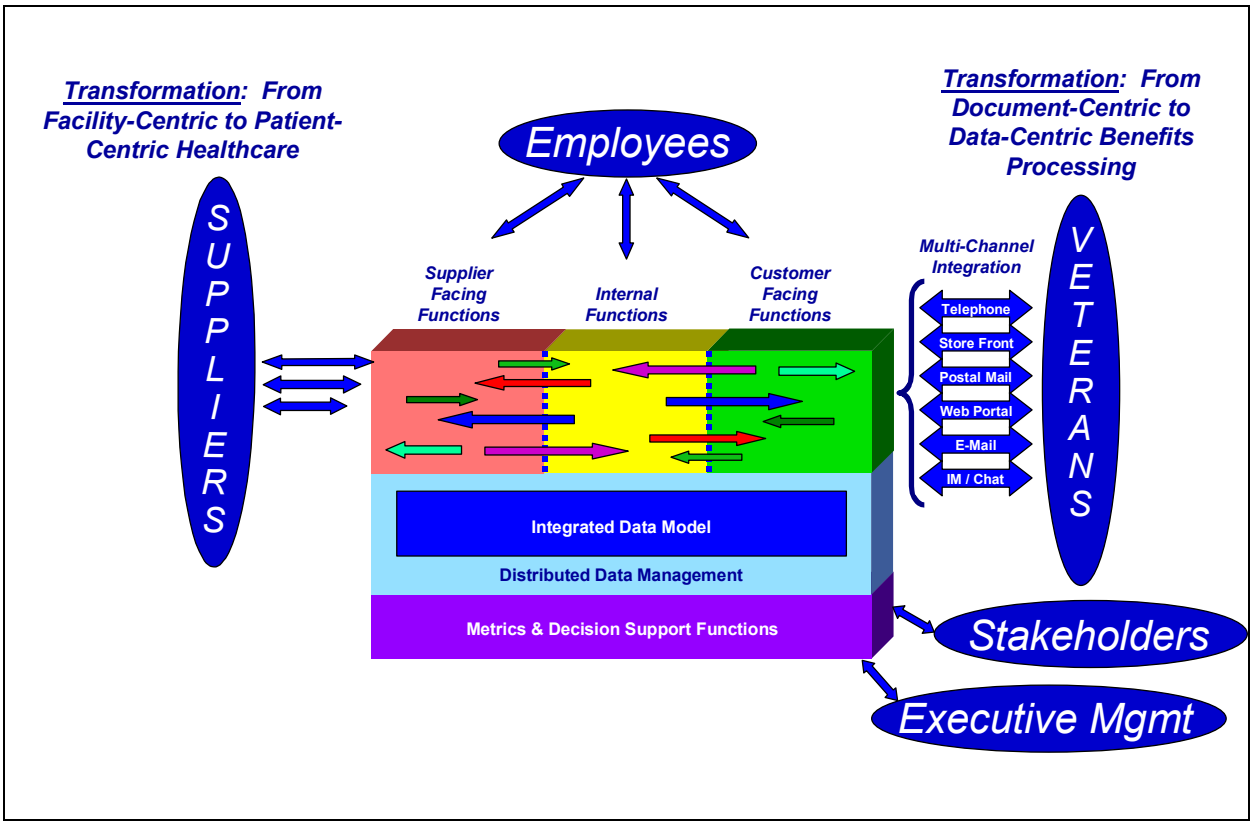


Figure 2-1: Logical model for the applications layer of the target One-VA Enterprise Architecture

Figure 2-1 presents a logical view of the applications layer model for the target One-VA EA. Maintaining a Veteran-focused perspective requires a fundamental level of integration across business lines when it comes to both processes and corporate data. At the core of the logical model of Figure 2-1 therefore is an integrated data model aimed at catalyzing Veteran-centered integration of corporate information. Since the Department is national in scale and supports a population of over 26 million Veterans, a robust distributed data management capability is required to maintain synchronization of the corporate information across the enterprise and to manage concurrency issues. Front office and back office functions are organized into customer facing functions, internal functions (to include Enterprise Resource Planning (ERP) and vertical line of business specific functions), and supplier facing functions. While these functions are depicted in Figure 2-2 with distinct boundaries, the reality is that the boundaries are soft boundaries. The focus of this One-VA EA is on processes integration and data integration to maintain a Veteran-focused perspective. In general, the processes across the Department will span the regions of customer facing, internal and supplier facing functions as depicted by the arrows spanning these regions. Particularly when dealing with Veteran customers, it is also important to integrate across all available channels of communications to include postal mail, traditional storefront operations, telephone call center, the Internet and the World Wide Web, and even electronic messaging. Additionally, metrics and decision support functions support executive management and stakeholders.

The One-VA to-be vision is to focus on delivery of services to the veteran. This requires that VA move from facility-centric to patient-centric healthcare and from document-centric to data-centric benefit delivery.

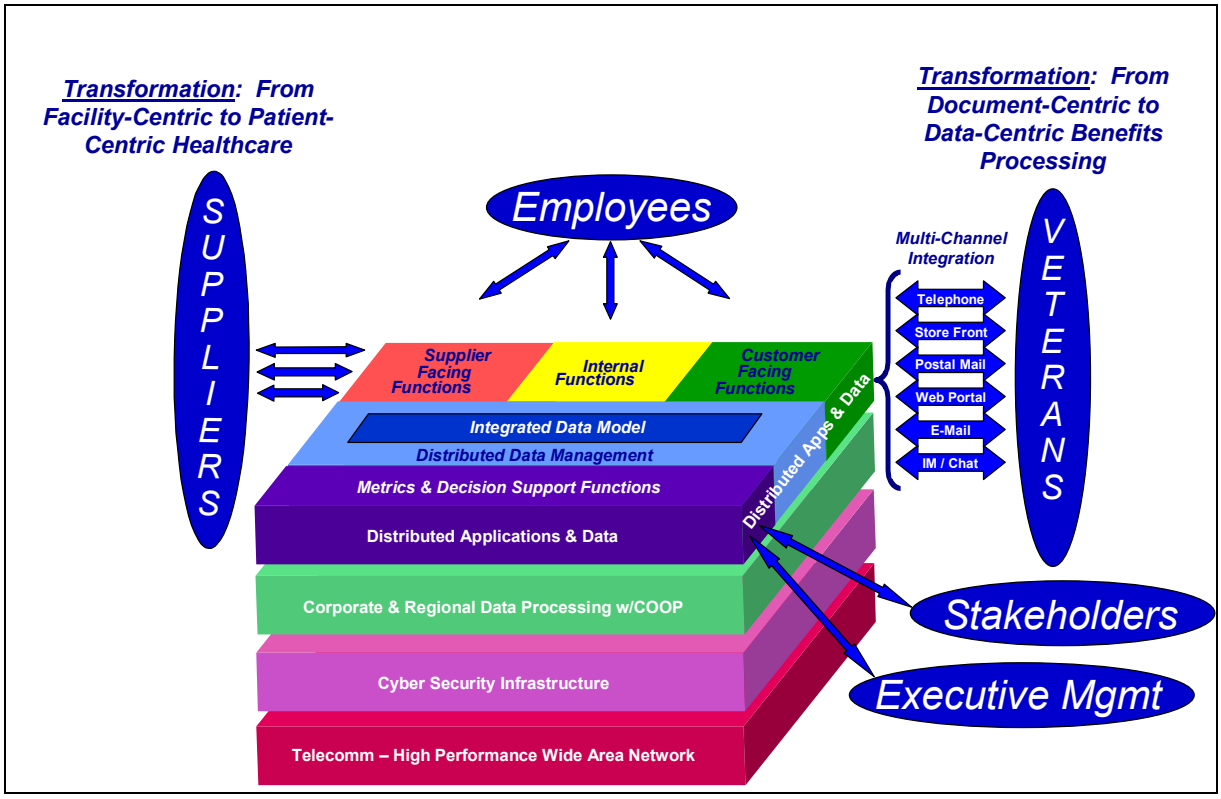


Figure 2-2: Logical model for the overall target One-VA Enterprise Architecture

3 The One-VA Enterprise Architecture Program Environment

3.1 Introduction

This chapter presents an overview of the structures (i.e., organization) and processes (i.e., activities) of overall VA governance, describes the structure and processes of VA's Enterprise Architecture governance and how it fits into overall VA governance. The roles and responsibilities of VA's Enterprise Information Board (EIB) and Chief Enterprise Architect are described as well as how VA's Enterprise Architecture processes are integrated with VA's information technology investment and project approval processes.

3.2 Applicability

All VA systems will be included within the Department's Enterprise Architecture. VA will develop, follow, and enforce policies and procedures that define and maintain its Enterprise Architecture. VA's Enterprise Architecture governance organization and processes will mature over time and various levels of detail are expected for different categories of systems. Systems will be engineered to a degree and timetable to be specified by the governance process according to categories such as:

- infrastructure and networks,
- legacy applications,
- in-process applications,
- new initiatives,
- ad hoc/demand systems required for special/specific short-term needs, and
- stand-alone applications

All systems will be reported. The scope, impact and demands on infrastructure, cost, data sharing, interoperability, and interface criteria within and outside VA will also determine the required level of detail to be reported.

3.3 Overview of the VA Governance and Enterprise Architecture Governance

In May 2001, the Secretary approved the establishment of a new VA governance framework. The purpose of this framework is to establish the structure, process, and procedures for the development of recommendations for the Secretary regarding policy, planning, and management of issues. This framework establishes a process for reviewing the implementation of new initiatives and program performance in key areas. It also

establishes two new forums (also called "fora"). The first is VA's Executive Board (VAEB), chaired by the Secretary. The second forum is the Strategic Management Council (SMC), chaired by the Deputy Secretary. The Council has broader membership and is responsible for reviewing all major policy and management issues, assessing options, and making recommendations to the Secretary through VA's Executive Board.

As Chair of VA's Executive Board, the Secretary reviews and approves VA's Enterprise Architecture, the membership of the Enterprise Information Board, changes to this Strategy Governance and Implementation document, and new initiatives associated with the Enterprise Architecture. The composition, roles and responsibilities, and objectives of the Strategic Management Council and under it the Enterprise Information Board, which is the information technology initiative review board for the Department, is discussed later on in this chapter.

Full participation of VA's program/business and information technology communities is essential for VA's Enterprise Architecture to be successful. The governance process ensures that the Enterprise Architecture is kept current and becomes part of VA's overall decision-making processes. To contribute effectively to VA's mission and strategic goals, and improve the delivery of benefits, services, and information to the veteran, the governance of VA's Enterprise Architecture must flow from VA's corporate governance and be aligned with it.

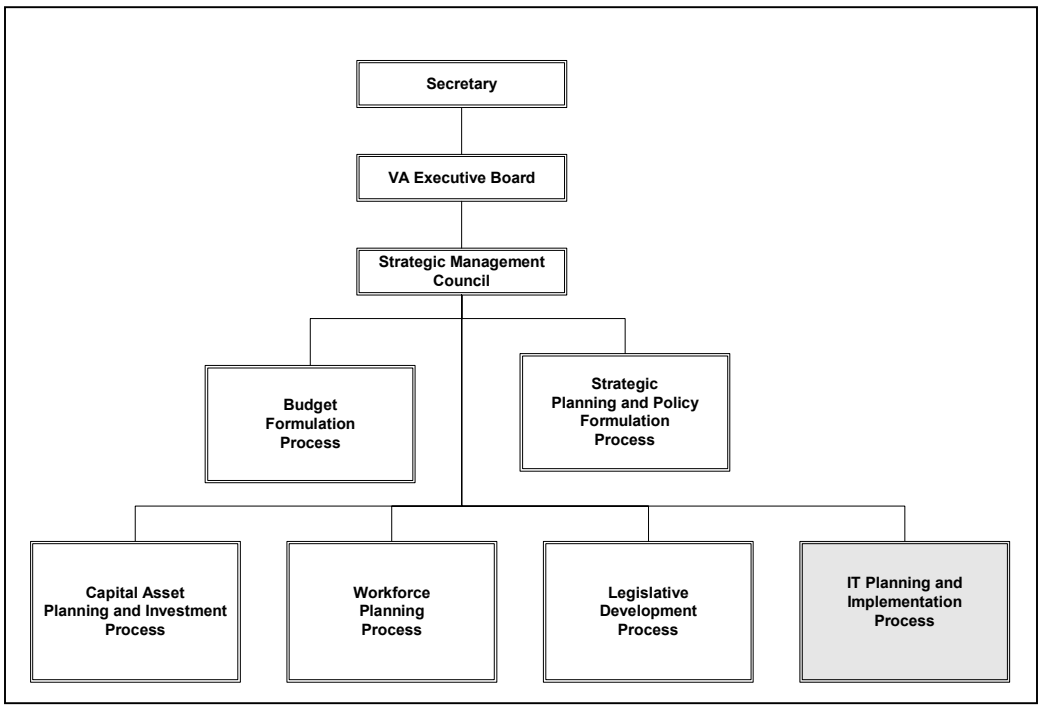


Figure 3-1: VA's Governance Framework (i.e., Structures and Processes)

Figure 3-1 summarizes the organizational structure of overall VA governance and the processes that support it. The Enterprise Architecture governance processes are part of VA's governance processes for information technology and, as such, are incorporated within the existing VA governance framework as indicated by the highlighted box in Figure 3-1 with one exception. The Chairman of the Strategic Management Council will take Enterprise Architecture matters directly to the Secretary for approval unless the Secretary, the Deputy Secretary, or an Under Secretary determines that the matter requires a review by the VA Executive Board.

The processes and structures of VA Enterprise Architecture governance are designed to leverage overall VA governance processes and structures. VA's Enterprise Architecture governance consists of a collaborative structure that includes full participation by VA's program/business and information technology communities. This degree of participation from both VA program/business and VA information technology communities is critical to the successful implementation, maintenance, and long-term relevance of information technologies and Enterprise Architecture in VA.

3.3.1 VA's Information Technology Planning Process

The core of VA Enterprise Architecture governance is the information technology planning process established by the Secretary. The information technology planning process is responsible for aligning information technology with the program/business needs and strategic goals of VA. The information technology planning process strives for a total collaboration of program/business with information technology, and consists of the following three functions or processes:

- Enterprise Architecture
- Capital Planning
- Project Management Oversight

The information technology planning process supports the review of information technology investment proposals for compliance with VA's Enterprise Architecture. The Enterprise Information Board oversees this process. The Assistant Secretary for Information and Technology (who is also VA's Chief Information Officer), as the process owner of the information technology planning process, is the steward responsible and accountable for creating, leveraging, coordinating, and implementing VA's Enterprise Architecture. The Enterprise Information Board is co-chaired by the Assistant Secretary for Information and Technology and a Deputy Under Secretary, or their designated senior executive, from one of the three Administrations on a yearly rotational basis. The members of the Enterprise Information Board include VA's Deputy Chief Information Officers, senior program/business executives from each administration and staff office, and the Chief Technology Officer. The Enterprise Information Board will meet twice monthly on the Thursday following each Strategic Management Council meeting. As

shown in Figure 3-2, this board is accountable to VA's Strategic Management Council and ultimately to the Secretary with the VA Executive Board meeting only if required.

Administration-specific committees that report to their Under Secretaries also link into the Enterprise Information Board and thereby participate in VA's technology governance processes. The objectives and responsibilities of the Enterprise Information Board are as follows:

Objectives:

- Ensure the VA Enterprise Architecture alignment and integration between information technology and program/business goals and processes.
- Ensure adequate funding and commitment to initiatives and the enterprise information technology infrastructures.
- Ensure adherence to VA's Project Management Oversight Process (i.e., Milestone Review Process)

Responsibilities include:

- Developing and recommending to the Strategic Management Council the direction for VA's Enterprise Architecture.
- Establishing and communicating the executive direction for the use of information technology.
- Ensuring the interests of program/business and information technology representatives from all major VA entities are considered in VA's Enterprise Architecture.
- Ensuring a viable integrated VA Enterprise Architecture is in place covering a rolling multi-year period.
- Ensuring that the Enterprise Architecture is current and provides complete and accurate descriptions of the baseline environment, the target vision, and the sequencing plan to take VA from the baseline (sometimes called "as-is") to the target (sometimes called "to-be") environments.
- Ensuring the suitability and consistency of technology investments with VA's Enterprise Architecture and strategic objectives.
- Ensuring that the information technology planning process addresses sociological change management, security, project management, and capital investment as well as VA Enterprise Architecture concerns.
- Conducting milestone reviews within VA's Project Management Oversight Process.

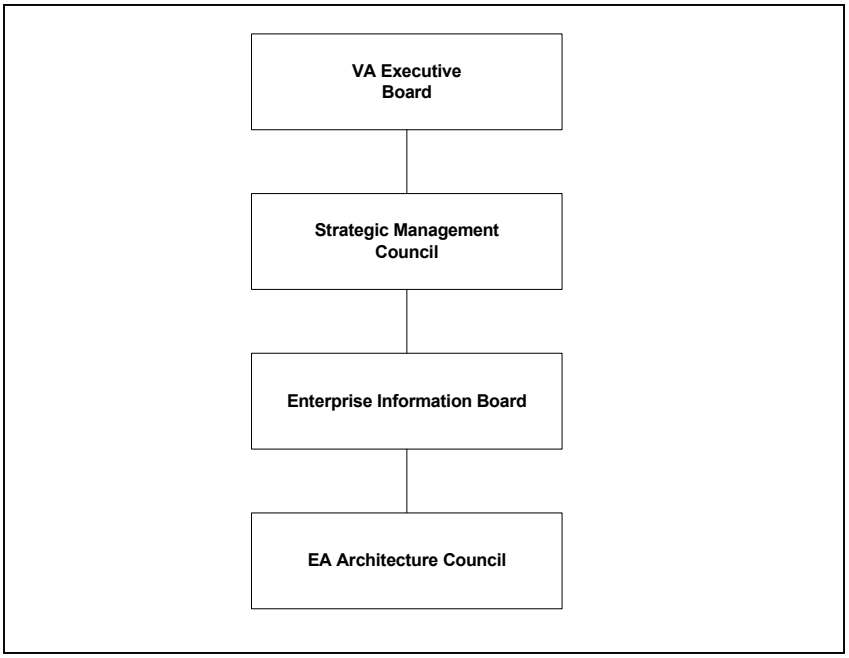


Figure 3-2: VA's Enterprise Architecture Governance Structure

3.3.2 Overall VA Enterprise Architecture Governance

The purpose of Enterprise Architecture governance is to manage, control, and monitor Enterprise Architecture activities and progress. Figure 3-2 illustrates the structure of the VA's Enterprise Architecture governance. This organization structure, its processes and procedures, and its roles and responsibilities, facilitate and advance the performance of VA's Enterprise Architecture.

The role of the Enterprise Architecture Council is to oversee and guide Enterprise Architecture issues for the Department, and continuously develop and refine VA's Enterprise Architecture to meet changing veteran needs, strategic goals, and the incorporation of new technologies. This Council is chaired by VA's Chief Architect and is composed of business representatives from each administration and staff office, and the Chief Enterprise Architects of the Deputy Chief Information Officer's organizations and staff offices. The Enterprise Architecture Council reports to VA's Enterprise Information Board for information technology planning process purposes. The Enterprise Architecture Council responsibilities include three processes: the Enterprise Architecture executive steering process, Enterprise Architecture business management process; and the Enterprise Architecture compliance education and enforcement process. The Chief Enterprise Architect is the process owner.

3.4 Roles and Responsibilities of VA's Chief Enterprise Architect

The VA's Enterprise Architecture is a formal program initiated and endorsed by the Secretary of the Department of Veterans Affairs. As such, the program warrants a formal

management structure, within the Office of VA's Chief Information Officer, consisting of information technology experts, program/business experts, and technologists. The major component of this management structure is the Office of Chief Enterprise Architect led by the VA's Chief Enterprise Architect. The Chief Enterprise Architect provides management and support of the Enterprise Architecture and reviews proposed projects for Enterprise Architecture compliance. The term "compliance" when applied to the VA's Enterprise Architecture is not binary but represents different degrees of alignment to the VA's Enterprise Architecture in terms of program/business objectives and technical standards.

The VA's Chief Enterprise Architect reports to the VA's Chief Information Officer. The Chief Architect is the principal advisor to the CTO, the DAS/IT, and the AS/IT on VA's enterprise architecture (EA), and oversees and manages the development, design, and implementation of the IT standards, and strategic planning policy of the Department's EA activities as required by the Clinger-Cohen Act. The Chief Enterprise Architect is responsible for leading the development of the VA's Enterprise Architecture and ensuring the integrity of the architectural development processes and the content of the Enterprise Architecture products. The Chief Enterprise Architect is the ombudsman to the information technology and program/business line units, and ensures that program/business unit processes are emphasized in the Enterprise Architecture. The Chief Enterprise Architect is also responsible for ensuring that the Enterprise Architecture provides the best possible information and guidance to information technology projects and stakeholders, and that systems development efforts are properly aligned with program/business unit requirements.

The VA's Chief Enterprise Architect is also the manager of the VA's Enterprise Architecture. In this role, the Chief Enterprise Architect has management responsibility for the Enterprise Architecture program, with the authority, responsibility, and accountability for the overall Enterprise Architecture effort. In this regard, the Chief Enterprise Architect is responsible for the planning, staffing, and the ultimate success of the Enterprise Architecture program, including acquisition of sustaining funding, negotiating schedules, and the timely and accurate delivery of the Enterprise Architecture products (or "artifacts").

The Chief Enterprise Architect, in collaboration with the Enterprise Information Board, or the Chief Technology Officer as its designee, will periodically refine the schedule and enhance the requirements for more comprehensive reporting, and in collaboration with the system owners, define the category of the system and the expected impact on VA Enterprise Architecture. There will be a sequencing of systems into the VA Enterprise Architecture; the first being those that are considered mission-critical, followed concurrently by in-process, new, and legacy systems.

The core competencies of the Chief Enterprise Architect include leadership skills, a comprehensive knowledge of Enterprise Architecture and requisite skills, and critical understanding of the role and relationship of information technology to supporting the programs/businesses of the VA. The Chief Enterprise Architect must be an effective communicator who can bridge the cultural differences that often exist between the

program/business and systems organizations, and among agencies, and facilitate interaction and cooperation.

The Chief Enterprise Architect provides a high-level project management framework for the VA's Enterprise Architecture project portfolio; and facilitates the evaluation and management of project, people, program/business, and technology risks and contingency plans, for the portfolio of information technology projects in the VA. The Chief Enterprise Architect also provides consulting advice to help ensure appropriate Enterprise Architect and project management tools, processes, and best practices will be used for project planning and management, and facilitates the collection and publishing of project metrics and status reporting on a consistent basis for all information technology projects within the VA.

The Chief Enterprise Architect is responsible for defining and managing the change management process, which includes changes to Enterprise Architecture products, processes, and technologies. The VA's Chief Enterprise Architect also advises senior managers of the potential human impacts involved in VA's Enterprise Architecture and information technology changes, including change planning, management, and communication processes in planning and implementing projects as defined in Enterprise Architecture sequencing plans.

It is also recommended that a Project Management Office be established in the Office of the Chief Information Officer. The Project Management Office will provide a consistent Departmental approach for project and risk management and serve as a source of expertise to program/business unit project teams, facilitate project risk management, evaluation, and contingency planning for people, program/business, and technology risks for the portfolio of information technology projects in the VA.

The Project Management Office will provide tools, training, and consulting advice to help ensure that appropriate project management tools, processes, and best practices are used for project planning and management, as well as, publishing project metric and status reporting on a consistent basis for all projects within the VA. The Project Management Office will also provide oversight and early warning of changes or slippages in project schedule, functionality, or deliverables that will impact other projects including those in the VA's Enterprise Architecture sequencing plan.

3.5 Integrating VA's Enterprise Architecture with VA's Information Technology Capital Planning and Project Approval Processes

Compliance with VA's Enterprise Architecture is a critical success factor. As stated earlier, full participation from both VA program/business and information technology communities is also an important factor to VA's Enterprise Architecture implementation and long-term relevance. Linking VA's Enterprise Architecture alignment review with VA's capital planning process is necessary to achieve the full benefits of both the Enterprise Architecture and information technology investments. Investment proposals often reflect changes in the organization's program/business functions as well as providing

a window to technology advancements. This information is valuable as a feedback loop to VA's Enterprise Architecture planning and development function because the architecture must be changed to reflect current program/business functions and advances in technology must be considered when updating the Enterprise Architecture.

The integration of all three factors (i.e., program/business, technology, and investment) is illustrated in Figure 3-3, which shows that VA's Enterprise Architecture process guides the Department's capital planning yields information that guides changes to the Enterprise Architecture. This interaction results in Architecture Alignment and Assessment, thus VA's Enterprise Architecture facilitates the integration and alignment of program/business, technology, and investment.

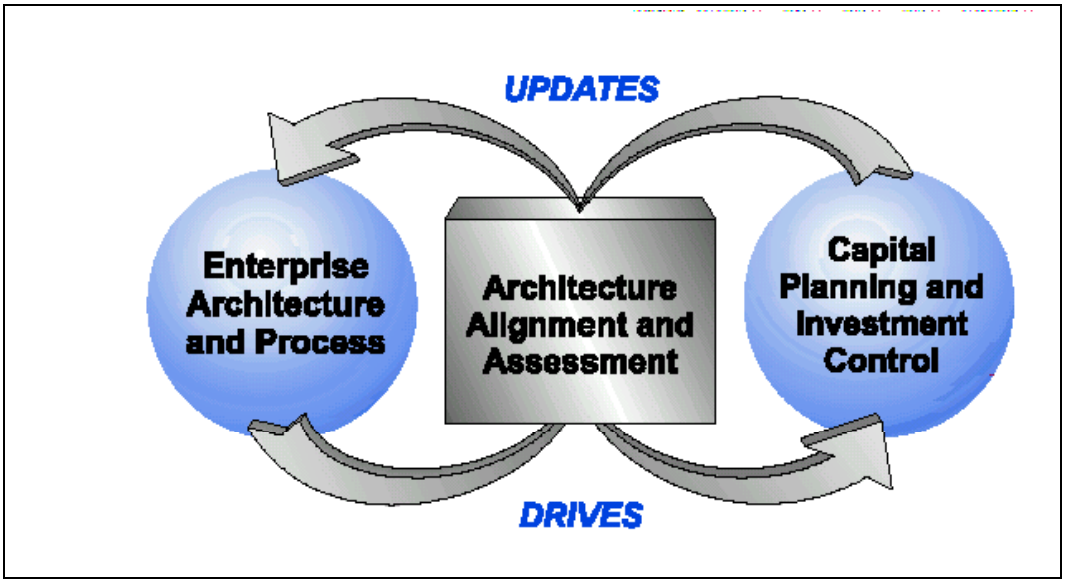


Figure 3-3: VA's Architecture Alignment and Assessment Process

3.6 Capital Planning

As previously described, proposed initiatives, with Enterprise Information Board recommendation, are submitted to the Strategic Management Council for review, and to the VA's Executive Board for approval, modification, or rejection as part of the information technology planning process. The Chief Enterprise Architect will continue to evaluate and review Strategic Management Council approved information technology initiatives for the VA Enterprise Architecture compliance.

Recognizing that full compliance will have to be phased in over time, if the Chief Enterprise Architect determines that a project does not comply with the VA's Enterprise Architecture, the Chief Enterprise Architect will recommend a remediation plan to the Enterprise Information Board to bring the project into alignment. If, at any time, the Chief Enterprise

Architect believes a project does not comply with the VA's Enterprise Architecture, the Chief Enterprise Architect will recommend to the Enterprise Information Board that the initiative be terminated, suspended, or redefined.

The Chief Enterprise Architect will provide the Enterprise Information Board and Strategic Management Council with regular reports concerning all approved projects focusing on its overall VA Enterprise Architecture outcome and progress, as well as required project management, security, and organizational change concerns.

3.7 Integrating VA's Enterprise Architecture with Program Execution

The third and final element of linking VA's Enterprise Architecture to key Department processes is linking it to the execution of projects not only at milestone decision points but also throughout their execution. Compliance can be addressed as either a reactive inspection process or as a proactive process fully integrated with the project execution from the earliest stages of planning onward. VA has chosen this proactive approach. To affect this, clear relationships must be established between the Chief Enterprise Architect, Architects within the Deputy CIO offices, and System Developers.

The Chief Architect has primary responsibility for the Enterprise Architecture and alignment of program/business, technology, and investment. The Architects within each of the three DCIO offices have responsibility for ensuring alignment of all activities within their DCIO organizations to the Enterprise Architecture, as well as the vertical alignment of IT activities within their respective areas. Their responsibilities as they relate to the One-VA Enterprise Architecture are as follows.

3.7.1 VA Chief Enterprise Architect:

The responsibilities of the VA Chief Enterprise Architect are as follows:

- Establish the overall Department policies for development, sustainment and implementation of the One-VA Enterprise Architecture.
- Plan, program, budget and oversee the execution of all funding allocated across the Department for Enterprise Architecture as well as architectural initiatives undertaken within the DCIO organizations.
- Chair the Enterprise Architecture Council (EAC) and through the EAC, lead Departmental efforts to develop and maintain the One-VA Enterprise Architecture.
- Ensure compliance with the One-VA Enterprise Architecture across all projects contained within the VA IT Portfolio. Identify any issues of non-compliance to the CIO.
- This includes all stages of a project life cycle from initiation to sustainment in service. It includes formal evaluation of compliance at Project Milestone

reviews as well as regular interaction with the DCIO Architects and Development organizations between formal Milestone reviews.

- Ensure the identification of all common data, services, integration points and interdependencies among projects within the IT portfolio and the proper synchronization of projects to accommodate those interdependencies across the overall IT portfolio. Identify any project integration or synchronization issues to the CIO.

- In conjunction with the Chief Technology Officer, lead the development of any centrally managed applications layer projects that provide common services horizontally to other elements of the IT portfolio.

3.7.2 Health, Benefits and Memorial Affairs Architects:

The responsibilities of the Health, Benefits and Memorial Affairs Architects are as follows:

- Represent the interests of the VA CIO and Chief Architect within the administrations in ensuring adherence within their organizations to the Department policies for implementation of the One-VA Enterprise Architecture.

- Represent the interests of the business lines within the administrations in the establishment of procedures for development, sustainment and implementation of the One-VA Enterprise Architecture. Ensure adherence within their organizations to those procedures.

- Provide planning, programming, budgeting and spend plan input to the Chief Architect for architectural initiatives undertaken within the DCIO organizations. Execute approved spend plans for all architectural activities within their DCIO organizations.

- Serve as the architectural representative to the EAC for the interests of the business lines within the administrations in the development and evolution of the One-VA Enterprise Architecture.

- Proactively engage with the leadership of the DCIO office development organization and Project Managers / Chief Engineers on individual development projects to ensure compliance with the One-VA Enterprise Architecture across all projects being executed in their respective development organizations. This includes all stages of a project life cycle from initiation to sustainment in service. It specifically includes direct involvement in early planning and establishment of project schedules and the identification of specific areas of detailed involvement by the Architects in the design process. The objective is to ensure alignment with the One-VA

Enterprise Architecture and its logical and physical distributed systems architecture throughout the design, development and integration process. It also includes formal evaluation of compliance at Project Milestone reviews. When issues of non-compliance arise that cannot be rapidly resolved, they must be identified to the Chief Architect (with parallel notification to their respective DCIO).

- Proactively engage with the leadership of the DCIO office development organization and Project Managers / Chief Engineers on individual development projects to ensure the identification of all common data, services, integration points and interdependencies among projects executing within their DCIO organization, both internally to other projects within the organization and with other external projects executing elsewhere in the Department or outside of the Department. Ensure proper synchronization of projects to accommodate those interdependencies. Identify any project integration or synchronization issues to the VA Chief Architect (with parallel notification to their respective DCIO).

3.7.3 Health, Benefits and Memorial Affairs Development Directors and Project Managers / Project Chief Engineers:

The responsibilities of the Health, Benefits and Memorial Affairs Development Directors and Project Managers / Project Chief Engineers are as follows:

- Proactively engage with their respective DCIO office Architect, and through them with the VA Chief Architect to ensure their development projects are adequately reflected in the development and evolution of the One-VA Enterprise Architecture.

- Proactively engage with their respective DCIO office Architect, and through them with the VA Chief Architect to ensure compliance with the One-VA Enterprise Architecture across all projects being executed in their respective development organizations. This includes all stages of a project life cycle from initiation to sustainment in service. It specifically includes ensuring direct involvement of the DCIO Office Architect in early planning and establishment of project schedules and the identification of specific areas of detailed involvement by the Architects in the design process. The objective is to ensure alignment with the One-VA Enterprise Architecture and its logical and physical distributed systems architecture throughout the design, development and integration process. It also includes formal evaluation of compliance at Project Milestone reviews.

- Proactively engage with their respective DCIO office Architect, and through them with the VA Chief Architect to ensure the identification of all common data, services, integration points and interdependencies among projects executing within their DCIO organization, both internally to other projects

within the organization and with other external projects executing elsewhere in the Department or outside of the Department. Ensure proper synchronization of projects to accommodate those interdependencies.

The Enterprise Architecture Council is the forum in which the One-VA Enterprise Architecture is being developed and maintained and therefore it provides the natural venue in which the VA Chief Architect and the Health, Benefits and Memorial Affairs Architects will discharge the responsibilities described above.

Some of the responsibilities described above however extend beyond the purview of the EAC and into the detailed integration of Enterprise Architecture into the execution of the individual projects within the overall IT portfolio. In those areas a subset of the EAC comprised of the VA Chief Architect and the Health, Benefits and Memorial Architects will be required to work directly with the heads of the DCIO based development organizations and the their project level PMs and chief engineers to proactively engage in the integration of individual executing projects into the overall evolving distributed systems architecture across the VA IT portfolio.

3.8 Integrated Evaluation and Assessment Process

The VA will continuously assess the effectiveness and efficiency of its overall the VA Enterprise Architecture. The VA will use a balanced measures approach to review progress and results associated with Enterprise Architecture development and implementation. As such, we will measure outcomes, process management, program/business and technical alignment, customer satisfaction, employee satisfaction, and other factors.

The evaluation process will consider the phases of the *Architecture Alignment and Assessment Guide* developed by the Chief Information Officer Council and the *Information Technology Investment Management Framework provided by the* General Accounting Office. These phases of analysis are shown in Figure 3-4.

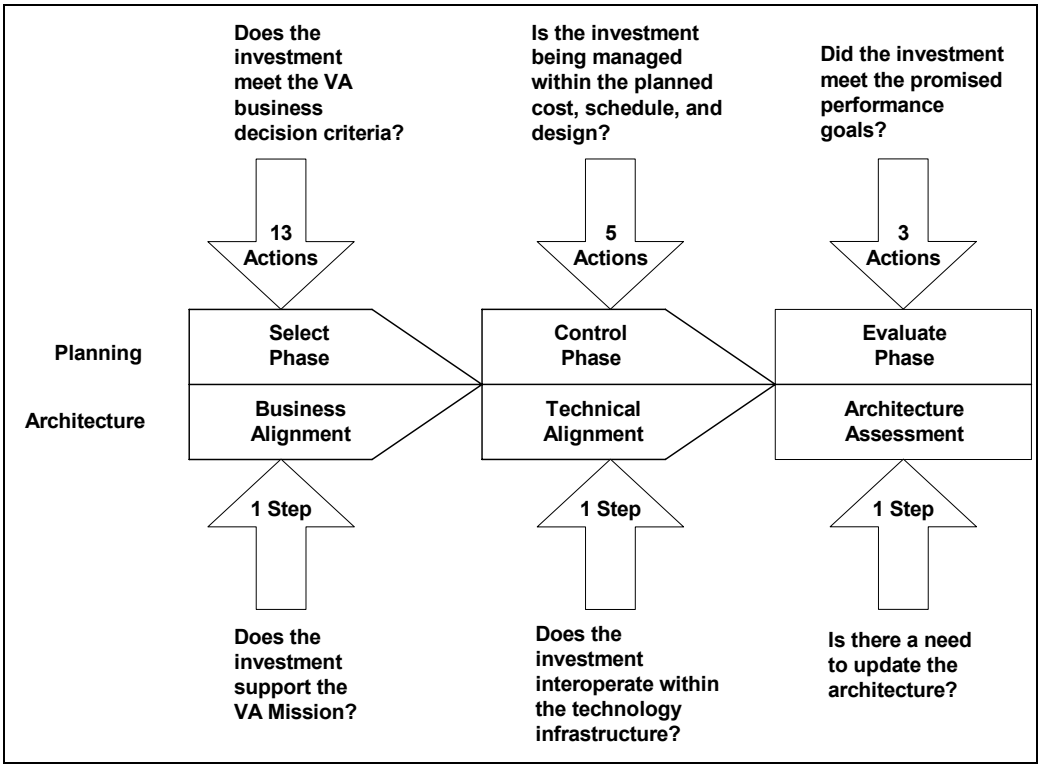


Figure 3-4: VA's Capital Planning Phases

As *previously described*, the Department will use the information technology planning process and capital planning processes to ensure that information technology investments consistently support strategic goals. All information technology projects must align with the Department's mission and support Departmental program/business needs while minimizing risks and maximizing returns throughout the investment's life cycle. The target architecture and the sequencing plan provide information for the three phases of the capital planning and investment control process, (i.e., select, control, and evaluate) as follows:

1. In the Select Phase, the VA evaluates the proposed investments to determine if they meet program/business decision criteria.

2. In the Control Phase, program/business and technical Enterprise Architecture compliance is monitored. Additionally, investments should be monitored as it evolves over time to ensure continued alignment as the VA's strategy and program/business focus.

3. In the Evaluate Phase, a final assessment is performed to determine technical and strategic compliance with the VA's Enterprise Architecture, as well as document lessons learned, feedback on project management and estimating accuracy, and organizational impacts. The results, including findings of

noncompliance, should influence strategic and tactical planning for new program/business and information technology projects (which could then lead to changes in the VA's Enterprise Architecture).

The VA will accomplish progress toward the target architecture through programs and projects. New and follow-on projects are initiated and selected, executed and controlled, and completed and evaluated. Every step in this process requires specific measures.

3.8.1 Initiating Project Assessment and Selection

Figure 3-5 depicts the information flow when a project is initiated. It serves as a guide through the cycle of proposal preparation, aligning the proposed project with VA's Enterprise Architecture, and making the decision to fund the effort. The information flow ensures that requirements are being addressed and that a proposed implementation meets expectations and requirements.

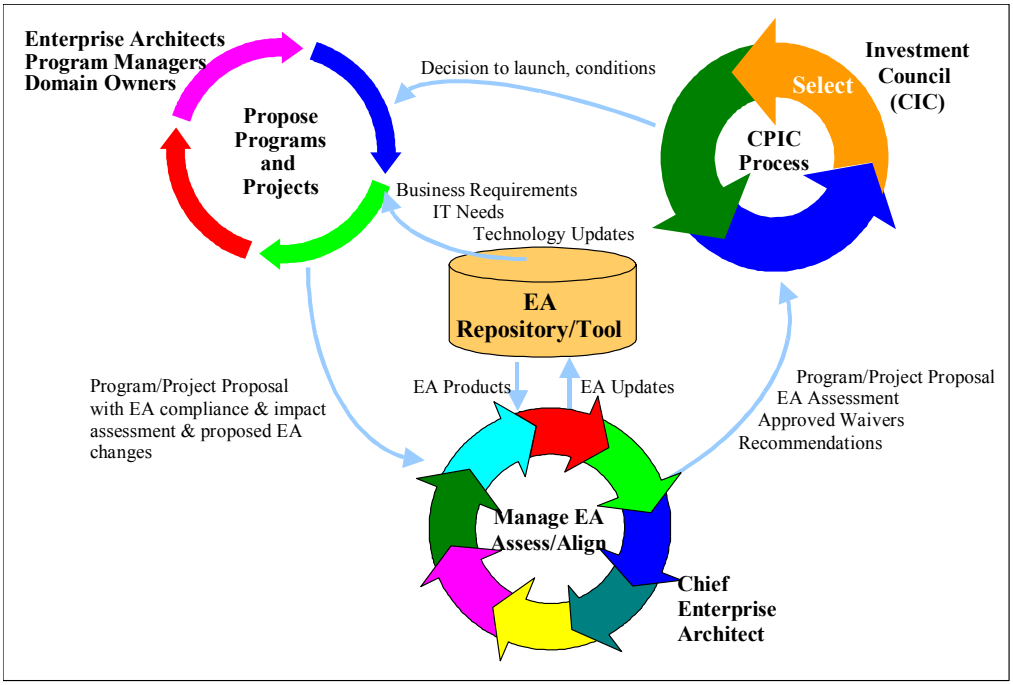


Figure 3-5: VA's Information Technology Initiative Assessment Process

Table 3-1 describes the main types of assessments that occur. In the initial phase of defining and selecting a project, the emphasis is on the program/business alignment, program/business case solution, location in the sequencing plan, and to a limited degree technical compliance. As the proposed project's concept matures, program/business and technical compliance are more equally addressed.

Type of Enterprise Architecture Reviews	Review Purpose/Goal
Program/business alignment assessment	Determine if the proposed project aligns with the VA's strategic plans, goals, values, and objectives. The goal of the review is to ensure that the expected outcomes of the project are aligned to program/business and high-level VA Enterprise Architecture requirements.
Program/business and technical case solution	Examine the proposed solution, at a high level, to determine the impact on the organization's information technology environment. The goal of the review is to ensure that the proposed solution supports both the program/business and technical architecture.
Sequencing plan assessment	Determine whether the proposed investment is consistent with the sequence and priorities in the VA's Enterprise Architecture and information technology plans. The goal of the review is to ensure progress toward the target architecture.
Architecture alignment assessment	Determine whether the architecture of the proposed solution complies with the enterprise standards (including security), VA's Enterprise Architecture, and project methodologies. The goal of this review is to ensure VA's Enterprise Architecture compliance of information technology projects.
Security architecture assessment	Determine that the proposed solution is compliant with VA standards and policies to ensure confidentiality, integrity, and availability.
Post-implementation assessment	Compare performance promised in the initial proposal, program/business case, and requirements to actual performance of the systems in production. Evaluate the ROI to validate estimated benefit.

Table 3-1: Program Assessment Criteria

Upon assessing the project's compliance with the VA's Enterprise Architecture, the VA's Chief Enterprise Architect will make recommendations and provide support to help bring non-compliant proposals into compliance. In cases where a waiver has been requested, the Chief Enterprise Architect will respond with an independent assessment of operational, economic, productivity, and other impacts of granting such a waiver, and make a recommendation to the Enterprise Information Board.

3.8.2 Assessing Progress (Execute and Control Phase)

The Chief Enterprise Architect is responsible and accountable to the Enterprise Information Board for maintaining VA Enterprise Architecture compliance once funding is committed and a project is initiated. Figure 3-6 depicts the information flow as the project cycles through the integrated VA Enterprise Architecture, systems life cycle, and capital planning and investment control processes. A project will pass through this cycle multiple times. There are continuous periodic interactions between the project implementers and the architecture governance process with more formal reviews at prescribed milestones.

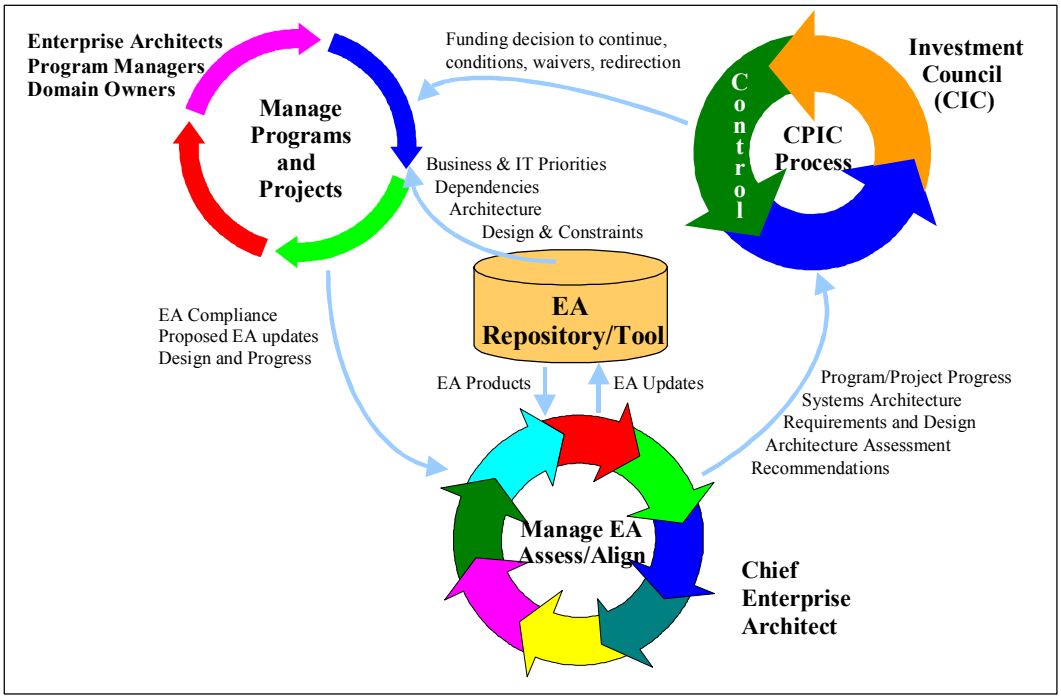


Figure 3-6: VA's Monitoring In-Development Projects (Execute/Control Phase)

In the control phase, assessment assures that the investment is being managed within the planned cost, schedule, design, and the VA Enterprise Architecture compliance. Status and deliverable information is provided by the project management process. The Chief Enterprise Architect and Enterprise Information Board (EIB) will use this information as the basis for recommendations and decisions about continued funding, refocus, imposition of development constraints, technical modifications, or possible redirection of technical efforts. This is necessary to manage and mitigate risks, because other investment decisions rely on analysis of progress reports and compliance assessments to arrive at implications on the total cost, schedule, and performance of the overall VA Enterprise Architecture.

3.8.3 Completing the Project Assessment (Evaluate Phase)

Most projects are interdependent with other development projects and legacy systems. Many require additional increments of capability or modifications provided by additional operations and maintenance efforts. When the project is complete, there is a final assessment of impacts on the Department, VA's Enterprise Architecture, program/business operations, other projects in the sequencing plan, and consequently future investment and funding decisions. Figure 3-7 shows the information flow upon completion of a program or project.

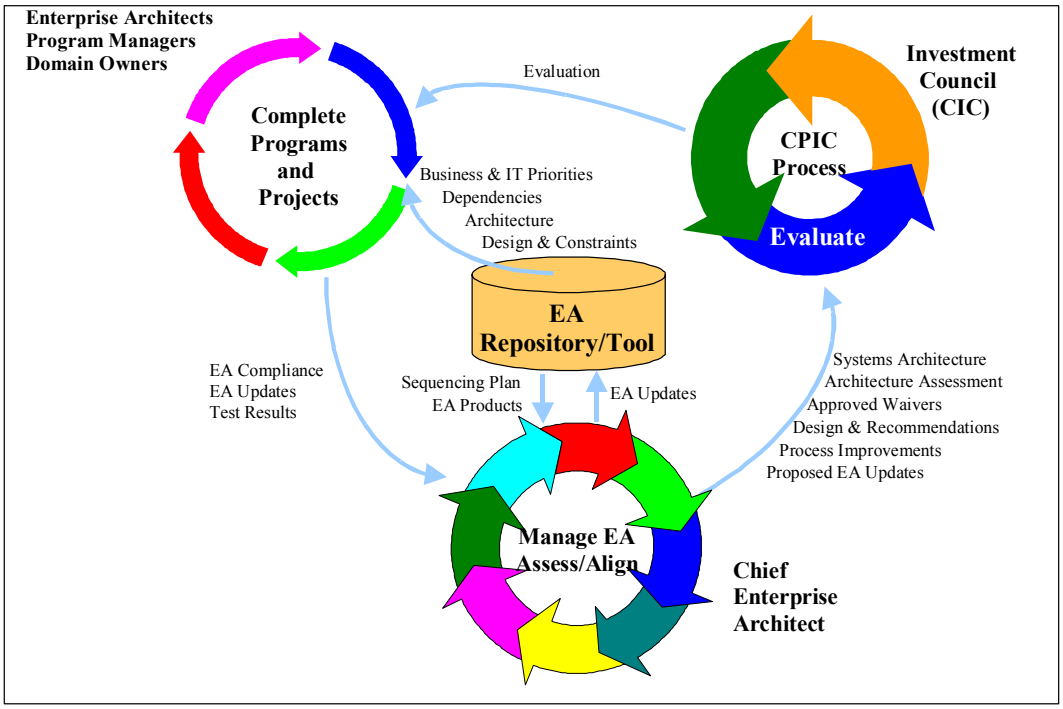


Figure 3-7: VA's Assessment of Completed Projects (Evaluate Phase)

The Chief Enterprise Architect performs an assessment of the project's implications and impacts on the VA's Enterprise Architecture and other concerns as required. The VA gains valuable information by evaluating the extent to which a project complies with the sequencing plan and target architecture. The experience and lessons learned contribute to the ongoing robustness of the VA's Enterprise Architecture.

The result of the final assessment is the updating of the baseline architecture with changes implemented in program/business processes, information technology products, deployment, technology, and operations. The sequencing plan, target architecture, and gap/transition analyses are also updated to show completion of the program/project. These results provide lessons learned for process improvement and form the basis of

program/business cases for new programs and projects. The experience and lessons learned contribute to the ongoing evolution of the VA's Enterprise Architecture.

3.9 Developing Policy for VA's Enterprise Architecture

VA's Chief Enterprise Architect will advise the Enterprise Information Board on VA's Enterprise Architecture policy, process, and information technology; and develop policies for the type and level of architectural documentation required for legacy, in-process, infrastructure, new, and other categories of systems. These policies will address:

- Project investment approval process – describing the steps for obtaining approval and funding.
- Relationship and integration of VA's Enterprise Architecture process to the capital investment process.
- Conducting in-process and post-implementation reviews.
- Waivers procedures for specific projects.
- Penalties for noncompliance to VA's Enterprise Architecture and standards.
- Workforce impacts of VA's Enterprise Architecture and information technology project changes.
- Project management considerations.

4 Information Technology Planning

The VA's Enterprise Architecture is integrated with the Information Technology Investing Process via two major categories: Planning, and Execution.

4.1 Scope Management

4.1.1 Applicability

All VA systems will be included within the Department's Enterprise Architecture. VA will develop, follow, and enforce policies and procedures that define and maintain its Enterprise Architecture. VA's Enterprise Architecture governance organization and processes will mature over time and various levels of detail are expected for different categories of systems. Systems will be engineered to a degree and timetable to be specified by the governance process according to categories such as:

1. infrastructure and networks
2. legacy applications
3. in-process applications
4. new initiatives
5. ad hoc/demand systems required for special/specific short-term needs and
6. stand-alone applications.

This chapter defines the scope of the One-VA Enterprise Architecture from an overall perspective as the primary authoritative resource within the Department for enterprise IT. The chapter also specifies the applicability of the One-VA EA for all IT projects to key processes across the Department including Capital Planning, Budgeting, Project Management Oversight and the day-to-day execution of Information Technology projects. It details specifically how the One-VA will be used in these key Department processes, and defines mandatory compliance requirements for all IT projects throughout their life cycle; from planning to in service use of the resulting IT system. The chapter concludes by discussing the Project Managers (PMs) perspective on the One-VA EA and how it supports, tasks, empowers and constrains PMs in the execution of their IT projects.

4.1.2 Scope

The One-VA EA is the primary authoritative resource within the Department of Veterans Affairs for enterprise IT throughout the entire life cycle of planning, programming, budgeting, development, integration, test/certification, deployment and in service support.

The primary purpose of the One-VA EA Project Document is to *inform*, *guide* and *manage* the decisions of the enterprise, especially as they pertain to IT investments. It is intended to serve as the primary authoritative resource within the Department of Veterans Affairs for enterprise IT throughout the entire life cycle of the project including the planning, programming, budgeting, development, integration, test/certification, deployment, and in service support. It addresses the entire spectrum of IT across the Department of Veterans Affairs.

By keeping with the business-focused, top down approach, this initial effort establishes the top-level program/business views that span the entire Department by providing the key elements of the *Planner's View* (row one of the Zachman Framework, columns one, two, three and six (data, function, location and motivation)), and the functional decomposition of the *Business Owner's* view (row two of the Zachman Framework, columns one and two (data and function)). Since these top-level views are entirely functional, they encompass both the current (baseline) and desired (target) environments for IT systems across the Department.

4.1.3 Project Decision Authority Oversight

The One-VA EA is the primary authoritative resource within the Department of Veterans Affairs for enterprise IT throughout the entire life cycle of planning, programming, budgeting, development, integration, test/certification, deployment and in service support.

As the primary authoritative resource for enterprise IT, the One-VA EA is applicable to all IT projects in the Department. Compliance with it is mandatory throughout the evolution of all IT projects over their entire life cycle. This compliance is to be validated at multiple events and in multiple Departmental processes including the Project Management Oversight process, Capital Planning process and the overall budget submission preparation process. Specific requirements for validation of One-VA EA compliance within the Project Management Oversight process under the authority of the formally appointed Project Decision Authority (PDA) are listed in Table 4-1 below.

Milestone	Requirement	Validation
0; Project Initiation Approval	Compliance with the *"Planner's View; Top Level Scope"* and positioning of the proposed IT system within the overall distributed systems architecture of the One-VA EA. Specific detailed compliance requirements are delineated in section 2.3.1 of the One-VA EA.	PDA
I; Prototype Development Approval	Compliance with the *"Business Owner's View; Functional Decomposition and Allocation"* to include compliance with the allocated functional baseline, and initiation of the detailed functional and technical requirements baseline of the One-VA EA. Specific detailed compliance requirements are delineated in section 2.3.2 of the One-VA EA.	PDA
II; System Development Approval	Continued compliance with allocated functional baseline, TRM and Standards Profile, and completion of the *"Designer's and Builder's View: Distributed Systems Architecture"* of the One-VA EA. Specific detailed compliance requirements are delineated in section 2.3.3 of the One-VA EA.	PDA
III; System Deployment Approval	Continued compliance with allocated functional baseline, TRM and Standards Profile, completion of the *"As-Built (Subcontractor's) View"* and initiation of the *"Functioning Enterprise View"* of the One-VA EA. Specific detailed compliance requirements are delineated in section 2.3.4 of the One-VA EA.	PDA
IV; Post Implementation Review	Continued compliance with allocated functional baseline, TRM and Standards Profile, and completion of the *"Functioning Enterprise View"* of the One-VA EA. Specific detailed compliance requirements are delineated in section 2.3.5 of the One-VA EA.	PDA

Table 4-1: One-VA EA Compliance Requirements and the Project Management Oversight:

Specific requirements for validation of One-VA EA compliance within the Capital Planning process are listed in Table 4-2 below.

Decision	Requirement	Validation
Inclusion of planning funds in an Exhibit 300	Completion of a Milestone 0 review and with it validation of compliance with the *"Planner's View; Top Level Scope"* and positioning of the proposed IT system within the overall distributed systems architecture of the One-VA EA.	VA CIO plus Administration CIO (as appropriate)
Inclusion of full acquisition funds in an Exhibit 300	Completion of a Milestone I review and with it validation of compliance with the *"Business Owner's View; Functional Decomposition and Allocation"* to include compliance with the allocated functional baseline, and initiation of the detailed functional and technical requirements baseline of the One-VA EA.	VA CIO plus Administration CIO (as appropriate)

Table 4-2: One-VA EA Compliance Requirements and the Capital Investment Planning Process

Finally, during the overall preparation of the annual Department budget submission, even existing IT systems must identify their tie to the One-VA EA by at least identifying the EBFs and KEFs along with the subfunctions from the perspective of the *"Planner's View; Top Level Scope"* and the *"Business Owner's View; Functional Decomposition and Allocation."* The VA CIO and Administration CIOs together with their respective architects will validate compliance, and as appropriate such project consequences could include being terminated, suspended, or redefined.

5 Information Technology Project Execution and Monitoring

Figure 5-1 depicts the integrated process flow adopted by the Department for Information Technology projects across their entire life cycle. Within this flow, the major stages in the life cycle of a project from original identification of a need through to in-service support are identified along with five formal decision milestones:

- Milestone 0 Project Initiation Approval
- Milestone I Prototype Development Approval
- Milestone II System Development Approval / Full Acquisition
- Milestone III System Deployment Approval
- Milestone IV Post Implementation Reviews

It also depicts several major processes within the Department and their relationship to the IT system life cycle to include capital planning, funding, project execution, project management oversight and Enterprise Architecture. The One-VA Enterprise Architecture is being fully integrated into these major departmental processes and will play a pivotal role in all IT projects. This section describes specifically how that will occur. This section is intended to provide the high level principles in moving programs through the process. In the attached appendices are included more detailed checklists, templates, and other procedural information required by the various program managers to get through this process.

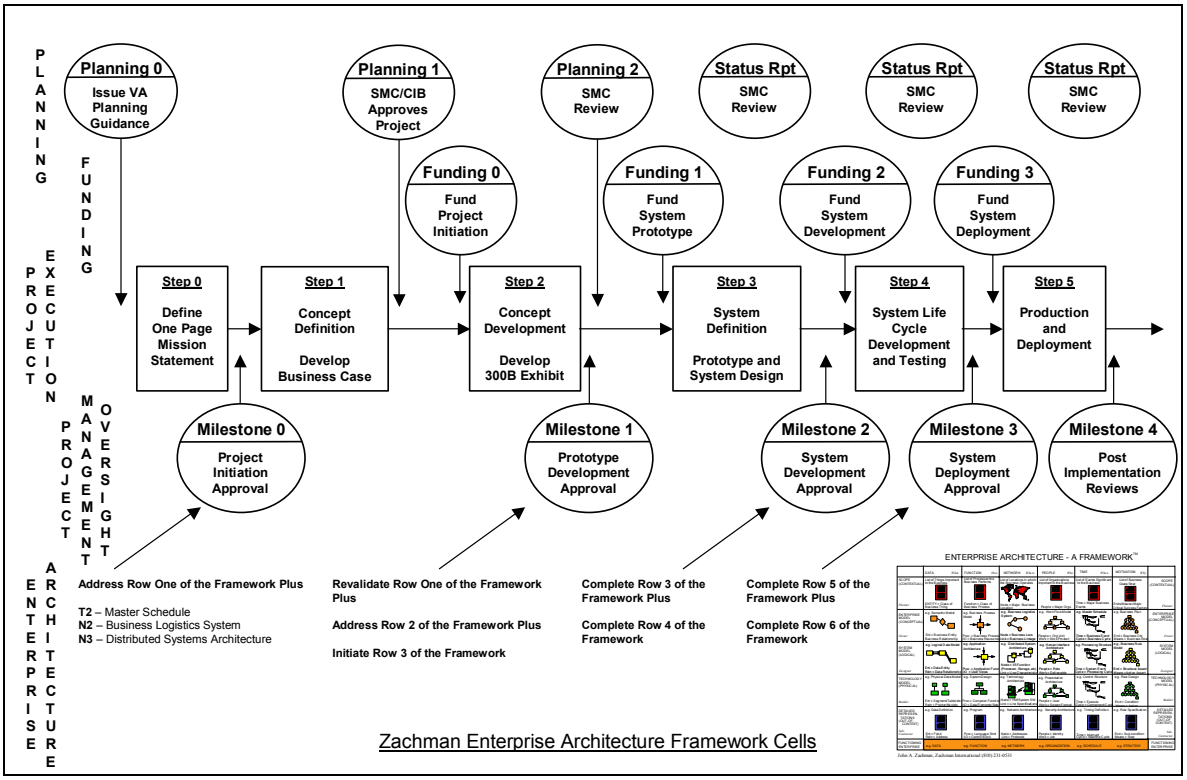


Figure 5-1: The Integrated Process Flow for VA Information Technology Projects

5.1 Milestone 0: Project Initiation Approval and its Relationship to the One-VA EA

Milestone 0 is intended to have the Project Manager (PM) address a basic area necessary to warrant project initiation approval. It does not presume any significant prior investment in analysis (either business or technical), concept or requirements definition or design; rather, it seeks answers to these most basic questions even before committing to that level of investment. From the perspective of the One-VA EA, at Milestone 0, PMs are expected to focus on the information relevant to his or her proposed new project in row 1 of the EA Zachman Framework. This information is described in Chapter 3 of the One-VA EA: *"The Planner's View; Top Level Scope"*. Chapter 3 of the EA architecture document provides a delineation of the business of the Department from a business-focused, top down, enterprise wide perspective organized by Enterprise Business Functions (EBFs) and Key Enabling Functions (KEFs). Therefore, to satisfy the PM Oversight requirements for Milestone 0 a PM shall use the material provided in Chapter 3 of the EA document as a baseline while addressing the following issues:

- Identify the specific EBFs and KEFs along with their corresponding specific high-level functions that the proposed project will address either in whole or in part (Framework row 1 column 2).

- Identify the specific external and internal drivers to be addressed either in whole or in part by the proposed project (Framework row 1 column 6).

- Identify the primary locations at which the proposed project will be installed and used (Framework row 1 column 3).

- Identify the organizational entities that will be directly affected by the proposed project (Framework row 1 column 4).

- Identify the major business events that will be directly affected by the proposed project (Framework row 1 column 5).

In the event a proposed project only partially addresses functions, drivers, or data classes the PM should identify any key dependencies on other projects or processes needed to fully address them. In addition, PMs are expected to provide a planned project schedule (framework row 2, column 5). This distributed systems architecture, beginning with the top level view of Figure 5-1 and proceeding through progressively further levels of detail is addressed in Chapter 5 of the One-VA EA document; *"Designer's and Builder's View: Distributed Systems Architecture"*. In the event that a PM considers the material in the corresponding sections of the One-VA EA document to be either incomplete, or to require refinement or correction, they should propose changes to those sections of the One-VA EA document to the Chief Enterprise Architect and through him/her to the Enterprise

Architecture Council (EAC) prior to or concurrent with the Milestone 0 review with the Project Decision Authority (PDA).

This definition of scope for the proposed project by the PM at their Milestone 0 decision point serves to bound the project and position it with respect to the enterprise as a whole. Finally PMs are expected to indicate their planned technical approach, including major alternatives to be considered in their forthcoming analysis of alternatives subsequent to a favorable Milestone 0 decision. The objective is to ensure projects proceed in concert with the One-VA EA from their very inception. The PDA will chair all Milestone reviews beginning with Milestone 0 and will ensure compliance with the One-VA EA in these specific areas prior to granting project initiation approval.

5.2 Milestone I: Prototype Development Approval and its Relationship to the One-VA EA

Pilot or prototype IT efforts are encouraged within the VA as a general principle in order to speed time to market and to increase the likelihood that the delivered product will fit the end users true needs. Commitment to a serious and structured piloting or prototyping effort however implies a commitment of planning resources and the Milestone I review is intended to have the Project Manager (PM) address areas necessary to warrant approving the commitment of these resources to a pilot or prototype effort. Therefore at Milestone I, PMs are expected to have completed their Business Case Analysis in terms of an Analysis of Alternatives, assessed Return on Investment, and performed a Cost Benefit Analysis. From the perspective of the One-VA EA, at Milestone I PMs are expected to focus on the information relevant to their project in row 2 of the One-VA EA Zachman Framework. This information is described in Chapter 4 of the One-VA EA: *"The Business Owner's View; Functional Decomposition and Allocation"*. In Chapter 4 of the One-VA EA document, an allocated functional baseline is established which functionally defines information systems in terms of their target processes, functions and sub functions, data, and their integration points with other information systems both inside and outside the enterprise.

In the event that a PM considers the material in the corresponding sections of this One-VA EA to be either incomplete, or to require refinement or correction, they should propose changes to those sections of this One-VA EA to the Chief Enterprise Architect and through him/her the Enterprise Architecture Council (EAC) prior to or concurrent with the Milestone I review with the Project Decision Authority (PDA). In addition, the PM is expected to take the allocated functional baseline for the project, its integration points contained within Chapter 4 of the One-VA EA (Framework row 2) and the TRM and Standards Profile, and begin development of the detailed functional and technical requirements baseline for the project (the subject of row 3 of the Framework). This includes the establishment of preliminary quantitative performance requirements for the project prior to the Milestone I review. The PDA will chair the Milestone I review and will ensure compliance with the One-VA EA and significantly increase the probability that the prototype will produce useful results that can transition into a production effort prior to granting approval for the project to proceed with prototype or pilot implementation.

This activity also serves as a validation of the architecture. As projects map to EBFs and KEFs, there is an opportunity to identify shared capability that may not yet have surfaced; particularly in the case of KEFs. This milestone provides a feedback-loop into the EA process for future maturation of the architecture.

5.3 Milestone II: System Development Approval and its Relationship to the One-VA EA

At prior Milestones, PMs were required to take the material that already existed in the One-VA EA from rows 1 and 2 of the Framework and identify the portions of it applicable to their specific projects. This pre-existing material (augmented, if appropriate, with material proposed as addition or modification to the One-VA EA by the PM) both defined and limited the scope of the project and positioned it as an integrated element of the overall target enterprise. To support these requirements, the material in rows 1 and 2 of the framework were developed using a business-focused, top down approach across the entire enterprise. In arriving at the allocated functional baseline, this approach provided a key mechanism for optimizing the program/business value and mission performance of the Department's systems by identifying and eliminating redundancy and driving integration across enterprise functions, processes and data.

At Milestone II, the approach for addressing the One-VA EA shifts from an enterprise wide focus, to a focus that maintains the broad enterprise wide perspective but also begins to capture increasing levels of detail about the specific projects. To preserve the enterprise wide perspective, the project at this stage must take as a mandatory requirement the results of the earlier work to establish the allocated functional baseline for the project and position it within the overall integrated enterprise. With that requirement as a starting point the project now begins to add the increasingly higher levels of detail to the One-VA EA specific to their project.

As one proceeds to Milestone II seeking approval for full system development and along with it to the Designer's View within the One-VA EA, the focus must add specific in-depth consideration of the IT system being pursued in the project. As this philosophical shift occurs in the project interaction with the One-VA EA, the overall enterprise wide focus is preserved in two significant ways. First, as previously indicated the project must take as a mandatory requirement the results of the earlier work to establish the allocated functional baseline for the project and position it within the overall integrated enterprise. Second, the contributions of multiple projects to the One-VA EA taken in aggregate in the *Designer's, Builder's, As-Is (Subcontractor's)* and *In Service (Functioning Enterprise) Views* fully describe the overall enterprise at each level of abstraction. This shifting project focus throughout the overall life cycle is illustrated in Figure 5-2.

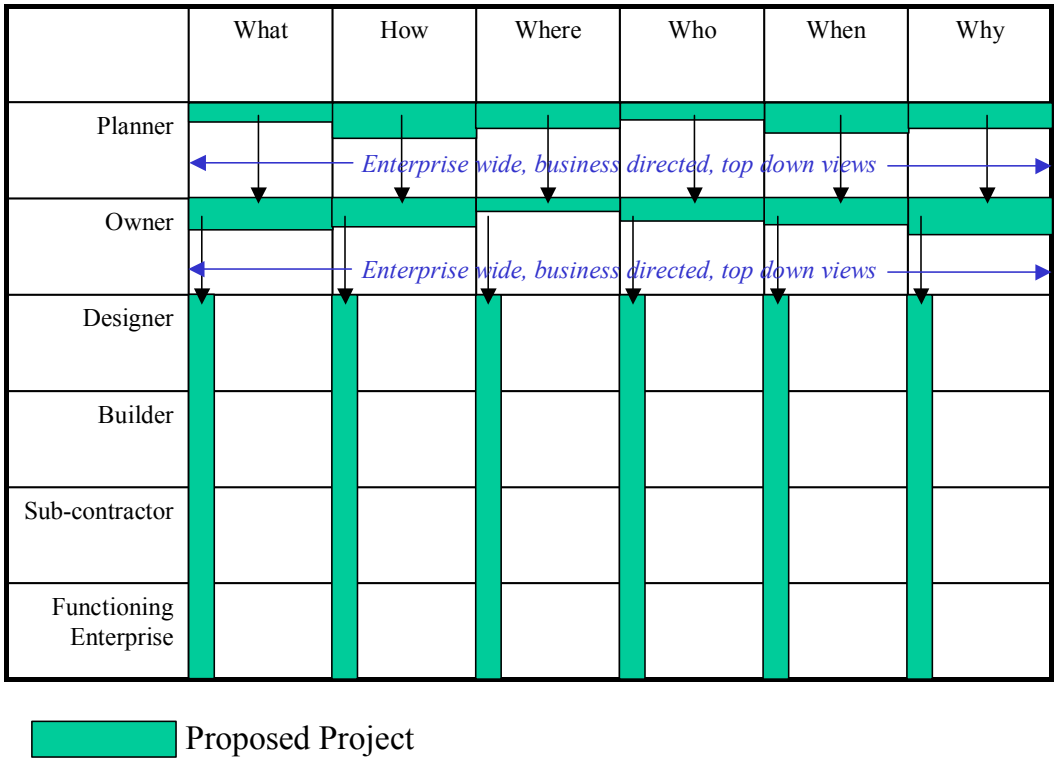


Figure 5-2: The Shifting Project Focus Throughout the Life Cycle of an IT Project

At Milestone II to gain approval for full-scale systems development or acquisition, PMs are expected to focus primarily on rows 3 and 4 of the Framework. Again, Appendix C provides the information required for this review. They are expected to revalidate the information addressed at Milestones 0 and I in terms of compliance with the allocated functional baseline and integration points.

At this stage in the project's life cycle, PMs are to have completed development of the detailed technical and functional requirements baseline for their project, which is the focus of row 3 of the Framework. They should also have initiated development of a design baseline and therefore initiate development of the content of row 4 of the Framework. In doing so, PMs must also show that they have adhered to the allocated functional baseline established for the project at Milestone I, the TRM, and the Standards Profile in the requirement baseline for the project. They must also show that their requirement baseline and their design baseline conform to the allocated functional baseline, and are on track to meet the quantitative performance requirements established for the project. The PDA will chair the Milestone II review and will ensure compliance with the One-VA EA in these specific areas prior to granting approval for the project to proceed with full-scale development or acquisition.

5.4 Milestone III: System Development Approval and its Relationship to the One-VA EA

Milestone III is intended to have the Project Manager (PM) address a basic set of questions necessary to warrant approval to deploy the system. Depending on the nature of a specific project, this decision Milestone can also be split into a Milestone IIIa for approval of limited initial deployment, and a Milestone IIIb for full, enterprise wide deployment. Key issues to be addressed are whether the project has adequately demonstrated through test that the system meets its functional and performance requirements (often referred to as effectiveness), and whether the system is adequately supported both from a human factor, documentation, spares and training perspective (often referred to as suitability).

At Milestone III from an One-VA EA perspective, to gain approval for deployment PMs must have completed the "*Builder's"* and *"As-Built (Subcontractor's) Views"* (rows 4 and 5 of the Framework) and in so doing validate that they have continued to respect the allocated functional baseline established for the project at Milestone I. They must demonstrate compliance with applicable portions of the TRM and Standards Profile. They must have completed cyber security certification and accreditation. They must also have defined the performance metrics to be collected during in-service operation of the information system as the basis for evaluating goal achievement in row 6 of the Framework. This should specifically include not only data to validate in service satisfaction of performance requirements, but also assess actual achieved ROI and CBA for comparison to projections made early in the project life cycle and updated as the project executed. Subsequently during Milestone IV post implementation reviews PMs are expected to report on the actual performance of the information systems in these areas.

5.5 Milestone IV: Post Implementation Review and its Relationship to the One-VA EA

Milestone IV, Post Implementation Review, is intended to assess in service effectiveness and suitability of an IT system as a continuation of the effectiveness and suitability examination undertaken in Milestone III. This includes assessment of the success in meeting the fielding plans, meeting performance parameters, cost, schedule, security and projected ROI. It also includes assessment of the adequacy of training, documentation and maintenance support for the IT system, as well as assessment of whether any changes are required to the IT system. From a One-VA EA perspective this provides an important feedback mechanism to also assess not only whether the system continues to be in compliance with the One-VA EA, but also whether in service experience indicated a need for change in the EA itself. To accomplish this at Milestone IV PMs must have completed the *Functioning Enterprise (In Service) View* (row 6 of the Framework).

5.6 The Capital Planning Process and its Relationship to the One-VA EA and the Project Management Oversight Process

Milestone 0 and I reviews, and therefore the early stages of addressing project compliance with One-VA EA are not only important from a Project Management Oversight perspective, they are integral to the Capital Planning process as well. The time phasing within the overall timeline for preparation of the Department's annual budget submission is therefore an important consideration for new start projects. Figure 5-3, Project

Management Oversight Relationship to the Budget Cycle, presents a nominal schedule of major events, and shows the timeline for preparation of the Department's annual budget submission. It reflects the timing of Milestone 0 reviews for approval of project initiation in conjunction with the preparation of the Exhibit 300 information to support planning funding and prioritization of the project for incorporation in the Department's budget submission. In order to include an Exhibit 300 for planning funds into the Department budget submission, a project should have completed at least Milestone 0 and demonstrated compliance with the One-VA.

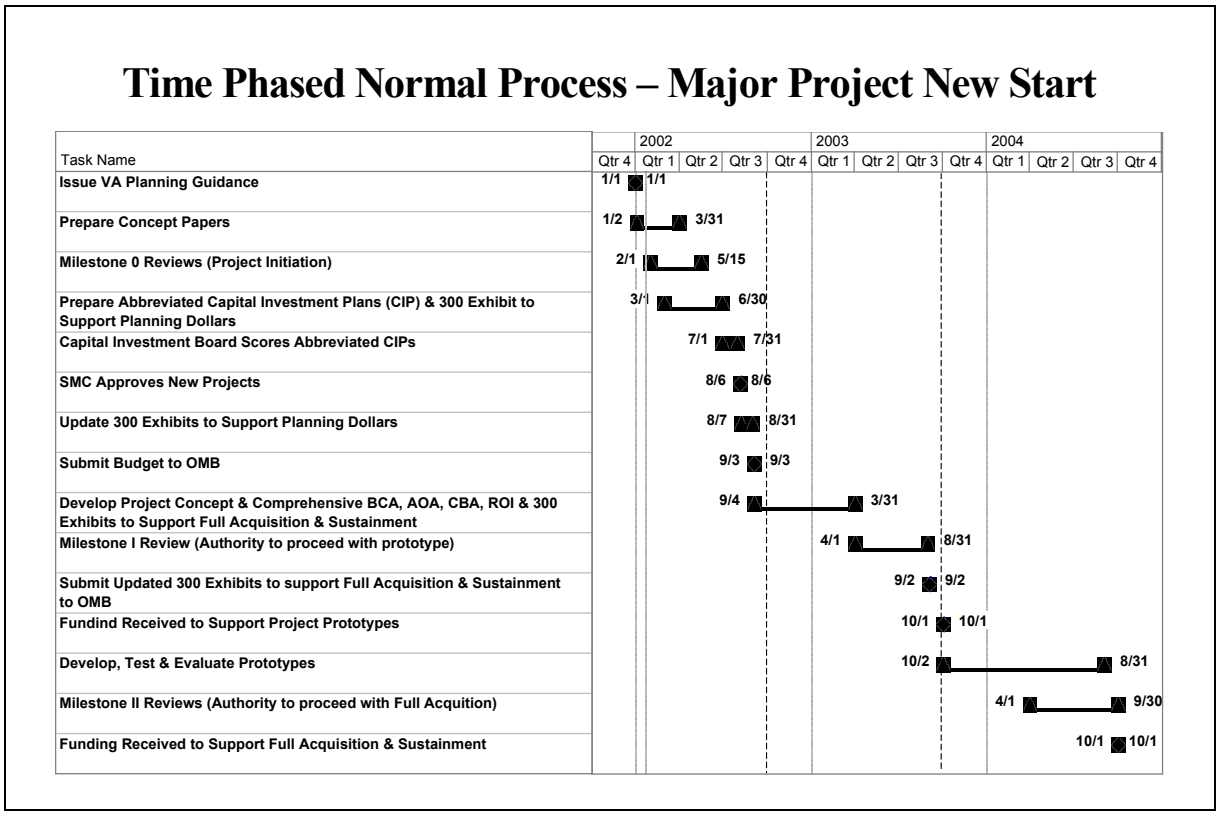


Figure 5-3: Project Management Oversight Relationship to the Budget Cycle; Nominal Schedule of Major Events

Figure 5-3 also shows the nominal timing for a Milestone I review to approve prototype or pilot development upon receipt of planning funding, along with the preparation of Exhibit 300 information to support full acquisition funding. In order to include an Exhibit 300 for full acquisition funds in the Department's budget submission, a project should have completed a Milestone I review and therefore have demonstrated compliance with the One-VA EA as discussed previously to include formalizing the establishment of an allocated functional baseline for the IT system. It also shows the timing of Milestone II reviews including the verification of compliance with the One-VA EA to authorize proceeding with full-scale development upon receipt of full acquisition resources. To receive Department support for both planning and full acquisition funding therefore, projects must show compliance with the One-VA EA as discussed in detail in the earlier sections at each

oversight Milestone beginning with project initiation. Additionally to receive Department support for maintenance funding, a project must, in its budget requests, identify its relationship to the One-VA EA and how it fits into the context the EA provides for the overall enterprise.

This discussion (and the requirements detailed above) illustrates the four-way coupling for every IT project in the Department between One-VA EA, the Capital Planning process, the budget submission preparation cycle, and the Project Management Oversight process.

5.7 A Project Managers Perspective on the One-VA Enterprise Architecture

The One-VA Enterprise Architecture does impose specific tasks on PMs and forces them to execute projects within certain functional and integration point boundary conditions. Sections 2.2 and 2.3 of the One-VA EA document delineate the requirements (and with these requirements the constraints) imposed on PMs to demonstrate compliance with the One-VA EA during the execution of their projects. Such constraints are the necessary effects of driving integration horizontally across multiple business and functional lines that span the entire Department. The One-VA EA will greatly benefit PMs in several important ways as they execute their projects. The tasks, constraints, and benefits that accrue as a result of the One-VA EA are discussed below in the remainder of this section.

Previous sections highlighted the EBF and KEF perspectives in relation to the One-VA EA and the rationalization of duplicative functions, processes and data in the allocated functional baseline produced as a key early product of the One-VA EA effort. This allocated functional baseline, along with the TRM and Standards Profile, form a necessary and sufficient set of documentation to functionally define the scope of an IT development project, identify its major integration points with other elements of the enterprise architecture, and specify broad technical approaches and standards to be employed in the development of the information system development project. This is both a significant enabler and a constraint on a PM in executing his/her project. It is a significant enabler because it specifies many functional and integration requirements for the project in unambiguous terms, and frees the PM from having to develop this specification, or compete with other projects or PMs over responsibility for key functions, processes, and enterprise data classes across the Department. It also serves as a constraint because it ensures that these key functions and enterprise data classes are implemented once and only once across the Department. In so doing, it prevents PMs who have not been allocated responsibilities for processes, functions and data classes from developing duplicative versions in a vertically focused style typically encountered in enterprises without a strong EA focus. Instead, it will force a PM to integrate his/her project with the authoritative source of the function, process or data as specified by the One-VA EA. This is a direct outgrowth of using One-VA EA to drive integration across the Department. That is, the One-VA EA will drive horizontal integration across what has traditionally been vertical, stove-style execution, both in terms of business processes and in systems and technologies used to implement the business processes. This will result in the achievement of a major Department goal – veterans will perceive the VA and its services as one entity and the term *"One-VA"* will experience a transition from being a slogan to becoming a reality.

As the VA proceeds in developing its One-VA EA and as projects are incrementally phased into execution, PMs will have the added responsibility of developing the artifacts to populate the One-VA EA beyond the allocated functional baseline to include requirements baselines, design baselines, as-built configuration baselines, and in-service performance metrics. These disciplines will instill rigor in the Department's IT development efforts and assist PMs in developing IT systems that meet requirements, deliver on schedule and stay within budget. The details of the requirements imposed on PMs for specific Milestone reviews were discussed in a previous section and will not be repeated here. As the One-VA EA repository is populated with these artifacts, e.g., business process definition, functional allocation, design, as-built, and performance artifacts, they will become very valuable repositories of corporate information and knowledge that will help project managers, and business and technical representatives with future development and maintenance efforts.

For individual PMs, compliance with One-VA EA comes in the form of two categories of requirements: (1) executing to the scope and constraints as defined in the allocated functional baseline, TRM and Standards Profile, and (2) providing the requirements, design, as-built configuration baselines, and in-service operations metrics artifacts to fully populate the One-VA EA repositories for their projects. In consideration of this, PMs will benefit from a clearer definition of the project scope and from the wealth of corporate and project knowledge inherent in the One-VA EA repository as the Department's EA matures over time.

5.8 Compliance

One-VA EA requires a fundamentally different way of viewing system design, development, deployment, and life cycle maintenance. Programmatic, business process, engineering, and operational decisions must consider enterprise-wide factors to ensure that the best decision is made for the enterprise and are not just local optimizations. EA compliance is important to increase the effectiveness of the One-VA infrastructure and network, as well as effectively use data and capabilities from legacy and other One-VA applications. EA compliance includes consideration of the full life cycle, beginning with project initiation and continuing all the way through program deployment, operational employment and retirement. One-VA EA compliance can significantly reduce integration problems across lines of business and improve interoperability.

The process of determining whether an architectural component or project is "EA-compliant" requires evaluation against a defined set of criteria. These criteria can be grouped into a series of categories to capture information about particular attributes, such as how a component behaves in a network enterprise environment or uses data in an existing data store.

An in depth discussion of the entire compliance topic is contained in Chapter 2 of the One-VA EA document.

6 Quality Management/Configuration Management

6.1 Overview

In discussing Quality Management and Configuration Management there are two levels that these disciplines must be addressed; the Project and Enterprise levels. In each of these cases the Project Manager has the primary responsibility for executing these disciplines. At the project level, the Project Manager must perform the Quality and Configuration Management tasks/responsibilities described in this chapter. At the Enterprise level, the Project Manager must also perform Quality/Configuration Management tasks. Oversight of the execution of these responsibilities will include both programmatic and architectural components of the project:

- Oversight for Quality/Configuration management issues such as (reliability, user acceptance, etc) is carried out by the Project Decision Authority (PDA)
    - For those projects identified as special interest the Deputy Secretary and Strategic Management Council (SMC) retain the PDA role, with review and recommendations from the CIO and the EIB.
    - For all other IT projects, the Deputy Secretary has delegated the PDA role to the CIO and EIB.
    - The CIO may, at his or her discretion further delegate the PDA role for individual IT projects to a DCIO;
- Oversight for architectural aspects of Quality Management and Configuration Management in dealing with enterprise level issues to include integration points, common data, common processes, interdependent schedules across multiple projects in multiple organizational components, and enterprise scale critical path relationships among key projects is carried out by the Chief Architect as a key advisor to the PDA. To carry out this responsibility, the Chief Architect will work with the DCIOs Architects and Project Managers and their Systems Engineers to ensure appropriate levels of architectural and programmatic integration as depicted below in Figure 6-1.

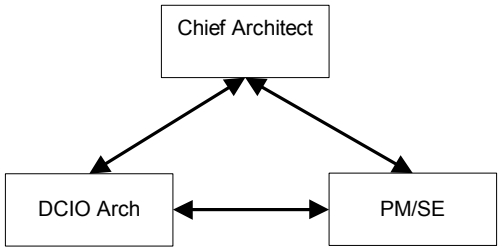


Figure 6-1: Quality Management / Configuration Management Oversight Coordination

For the One-VA EA Quality management and Configuration Management will be spread across both the Architecture level, and also at the program/project execution level.

Management should take quick and decisive actions to correct problems in light of established priorities. Examples of actions include infusion of additional resources (people, tools, or money), establishment of contingency plans, and redefinition of purpose and scope, introduction of missing or strengthening of existing control mechanisms, and increased oversight. Figure 6-2 depicts Cost, Schedule, Requirements, and Process leading to ensuring quality as four sides of a box, this box then leads to a quantified projected quality/risk projections in each of these four dimensions.

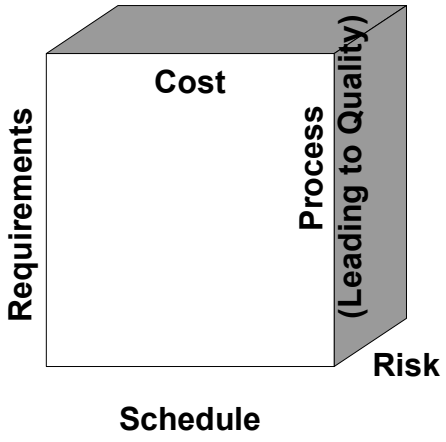


Figure 6-2: Quality Risk Factors

Modifying any one of these four factors while trying to hold the others constant changes the risk. Far too often projects increase requirements, reduce available funding or compress schedule without explicitly quantifying impact on the other factors. The result is often an implicit, unacknowledged sacrifice in processes leading to quality such as compressing scheduled test events or training, leading to a reduction in quality of the overall product and increased risk to the success of the project.

Therefore, any changes to the plans, projects, and/or architecture content to address deviations should be captured in an appropriate documentation trail, and should be justified on the basis of costs, benefits, and risks. Changes to an established baseline for a project, particularly post Milestone II where formal baselines have been established for a project in each of these factors must be processed through established change control processes and a formal board authority established for the project. The change documentation should characterize the problem, solution, and alternatives chosen and rejected in light of established priorities. It is a firm requirement in the Project Management Oversight process that PM's immediately report any breech in threshold for cost, schedule, or performance to the PDA, as soon as it is recognized and independent of the timing of formal MS reviews. In similar fashion once the specific EA compliance threshold for a project is established as discussed in Chapter 5, the PM must report any breech in this threshold to the Chief Enterprise Architect as soon as it is recognized. Also if any schedule change (with or without breaching threshold) adversely affects interdependencies among multiple projects, this must also be reported to the Chief Enterprise Architect as soon as it is recognized.

The EA process is a key support element of the operations of the Agency, and should assist the operations function in performance of its customer-focused mission.

The optimum EA process is not a single, one-time event, but is continuous and thus offers the opportunity for continuous improvement. This necessitates ongoing control with monitoring, reassessment, and refinement. As the discipline of enterprise architecting enters the mainstream of Agency operations, lessons can be learned from processes that worked and those that did not work, and from external organizations.

Quality management must be employed throughout the project life cycle to support the VA's goals to provide high-quality services to their customers. Project quality management provides structured feedback to project processes, inspections and testing of project products to ensure a successful effort. A quality plan provides direction and a road map to deliver high performance products and leads to a more productive use of scarce project resources.

Typically, a dedicated resource reporting to the Project Manager is allocated for the purpose of managing quality. Quality activities are performed at milestone reviews (and at other reviews between MS reviews) and may result in corrective actions that support project schedule, cost and performance goals.

Quality management is integrated with the project life cycle. Performance standards are established during project initiation; quality planning is incorporated with overall project plan development and quality control functions take place alongside the other project control processes. The Quality Manager is responsible for escalating quality issues.

Project management risk planning, change control and configuration management are interrelated with quality management, serving as vehicles for responding to quality control and assurance issues. Project quality management results in an improvement in quality for

project processes and products, which can be carried forward to future work efforts via the post implementation review, during project closeout.

6.2 Quality Requirements

The establishment of quality requirements is critical to overall success throughout the project's life cycle. Quality requirements involve the development of standards against which the project's success is to be measured. Also customer oriented metrics and user (i.e., VA employee) oriented metrics are developed. Functional and technical requirement standards for each major milestone and/or deliverable are developed and established to ensure the project successfully accomplishes the overall mission. These metrics will be tracked at MS reviews, baselined, and managed in a formal manner. For each of the various program milestones, critical success factors relating quality metrics will need to be provided by the program manager at the same time that requirements , schedule, and funding needs are finalized.

6.3 Quality Planning

Quality planning involves the development of a plan from the functional and technical requirements and is incorporated within the PMP. The plan maps out how quality will be measured throughout the project's life cycle and includes quality standards, review and sign-off of requirements for deliverables and establishing quality objectives.

In the quality plan, the Project Manager documents how quality will be measured at both the process and product functional and technical levels. Assuring project control measures are operating efficiently is just as critical as measuring any product variances from the plan. In addition, quality measurements should be tied to organizational goals, and should be specific, measurable, accountable, relevant and timely. This can be achieved by establishing quality measures that are tailored to the WBS. Basing quality measures on project milestones also discourages over-measurement, which is costly.

6.4 Quality Assurance

Quality assurance involves evaluating overall project performance on a regular basis to determine if the project is meeting the relevant quality standards identified during the planning phase. Milestone deliverables are examined for compliance with requirements so that errors can be detected, analyzed and corrected before they are compounded and carried forward into additional phases, causing expensive rework and potential project failure. This is accomplished through testing, inspection and review of each project phase. Test results are used to determine the impact of detected errors on project schedules, cost and outcomes. Unacceptable deviations are mitigated through corrective action. Examples of quality assurance tasks are:

- Integrated project reviews for conformance to project cost and schedule standards

- Requirements review for adherence to the project goals and objectives stated in the PMP
- Design specifications review for adherence to the requirements specification
- System specifications review for adherence to the design specifications
- Milestone deliverables review for adherence to design and system specifications
- Code reviews (for IT projects) for adherence to coding standards
- Acceptance testing for adherence to user acceptance criteria
- Configuration audits to ensure all change activities conform to CM standards
- Post-implementation reviews for conformance to overall project performance goals and objectives

6.5 Quality Control

Once quality assurance reviews are conducted, the findings must be compiled, documented and communicated to the appropriate stakeholders. The quality plan should identify the communication method, timeframe, and recipients. The Project Manager and business sponsor should be included to ensure corrective action is authorized when applicable.

6.6 Quality Improvement

Project quality is improved through the consistent application of quality processes and the documentation and publication of quality assurance and control results. As the project moves into later phases, the quality of both the project process and output improves. The documented results allow for the development of quality metrics and the integration of quality processes into the organizational culture. In a project environment, the quality "system" ensures the product satisfies management's commitment to improve the success of the overall organization. Success is the common goal of all project stakeholders, and quality is the link that establishes success in the organizational community.

6.7 Configuration Management Planning

6.7.1 Purpose

The purpose of Configuration Management is to establish and maintain the integrity of the products of the EA project throughout the project's life cycle. Planning for CM is to provide a thorough appreciation of the complexity, or simplicity, of the CM program

needed for each Configuration Item (CI) or Computer Software Configuration Item (CSCI) (CI/CSCI) under their management responsibility. Documenting this required planning effort not only provides the VA with needed planning information, but the resultant CM plans also serve as instructional devices for defining specific CM responsibilities, procedures and practices. In addition, the CM plans provide management with a tool for monitoring and reviewing the program.

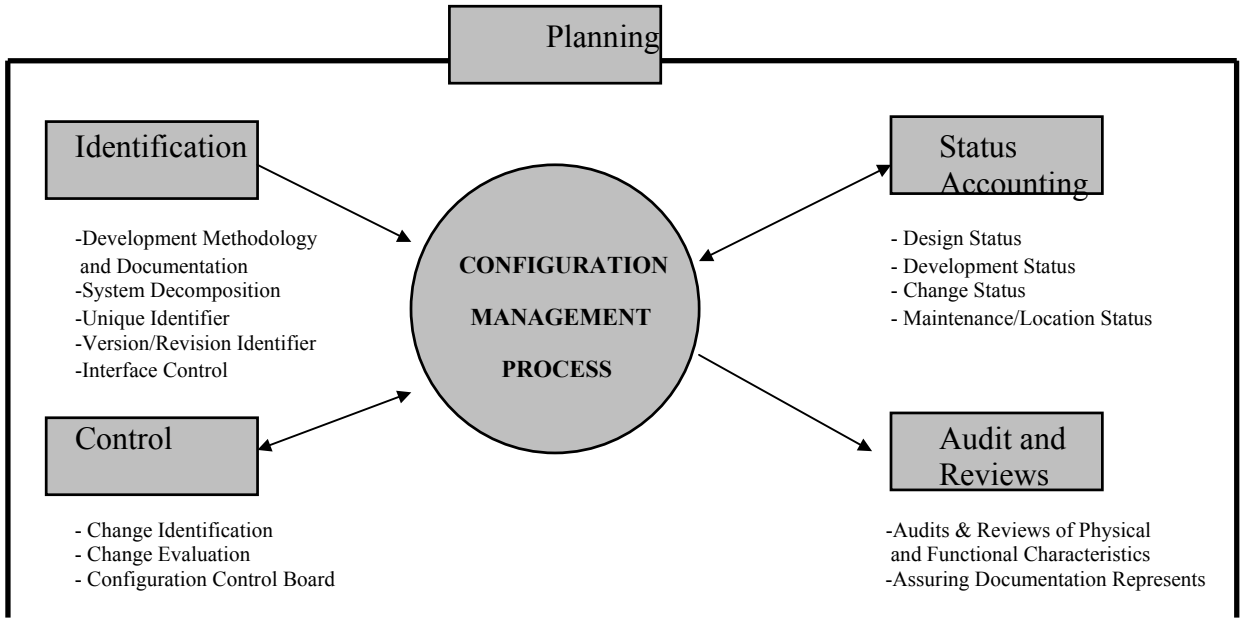
6.7.2 Application Configuration Management Plans

CM Plans are the means by which the Program Decision Authority, CIO, Chief Architect, and Project Managers establish and document the details of their respective programs. Initially, CM plans shall provide planning and procedural information. As the CI/CSCI progresses through its life cycle, the content of the CM plans shall be revised to reflect refined and updated planning and procedural information.

The CM plans shall identify the CI/CSCI and their relationship to the executing projects/programs. Implementing procedures pertinent to each element (as described below) shall be specified as they affect the CI/CSCI.

6.7.3 Configuration Management Elements

All five elements of CM (i.e., Planning, configuration identification, control, status accounting, audits/ technical reviews) shall be applied to each CI/CSCI. The degree, level, phasing, and intensity shall be determined by the tailoring process based upon the total program needs. Configuration Management involves identifying the configuration of the software and hardware (i.e., selected software work products and their descriptions) at given points in time, systematically controlling changes to the configuration, and maintaining the integrity and traceability of the configuration throughout the software life cycle.



Product

Figure 6-3: Configuration Management Elements

Therefore Project Managers shall perform the following functions:

- Plan configuration management activities.
- Identify, control, and make available selected work products.
- Control changes to identified work products.
- Inform affected groups and individuals of the status and content of software baselines.
- Establish a board having the authority for managing the project's baselines (i.e., a configuration control board - CCB).
- Appoint a group to be responsible for coordinating and implementing CM for the project (i.e., the CM group).
- Provide adequate resources and funding for performing the CM activities.
- Train members of the CM group in the objectives, procedures, and methods for performing their CM activities.
- Train members of the software engineering group and other software-related groups to perform their CM activities.
- Prepare a CM plan for each software project according to a documented procedure.
- Use a documented and approved CM plan as the basis for performing the CM activities.
- Establish a configuration management library system as a repository for the software baselines.
- Identify the work products to be placed under configuration management.
- Initiate, record, review, approve, and track change requests and problem reports for all configuration items/units according to a documented procedure.
- Control changes to baselines according to a documented procedure.

- Create products from the software baseline library and control their release according to a documented procedure.
- Record the status of configuration items/units according to a documented procedure.
- Develop standard reports documenting the CM activities and the contents of the software baseline and make available to affected groups and individuals.
- Conduct software baseline audits according to a documented procedure.
- Make and use measurements to determine the status of the CM activities.
- Review the CM activities with senior management on a periodic basis.
- Review the CM activities with the project manager on both a periodic and event-driven basis.
- Have the CM group periodically audit software baselines to verify that they conform to the documentation that defines them.
- Conduct reviews or audits by the software quality assurance group on the activities and work products for CM and reports the results.
- Project Managers are responsible for implementing this policy.

7 Risk Management

7.1 Overview

A critical aspect of project planning is to identify and effectively manage all project risks. The project management office (PMO) reviews current activities, issues, and progress to identify any additional potential risks that may affect the success of the project. Risk mitigation strategies are developed for each potential risk, and specific information about each risk should be documented and archived in a risk database.

Risk management must address the "portfolio" of applications, and the various dependencies upon shared infrastructure and services, as well as the execution of the individual project.
In each of these cases the Project Manager has the responsibility for ensuring there are risk mitigation strategies in place. Oversight of the execution of these responsibilities will include both programmatic and architectural components of the project:

- Oversight for Risk Management issues such as (shared infrastructure, services, etc) is conducted by the Project Decision Authority (PDA)
    - For those projects identified as key or major the Deputy Secretary and Strategic Management Council (SMC), after review by the CIO and the EIB.
    - For most projects CIO and EIB unless further delegated to the DCIO;
- Oversight for Architectural aspects of Risk Management in dealing with enterprise level issues such to include integration points, common data, common processes, interdependent schedules among multiple projects in multiple components of the organization, and enterprise scale critical path relationships among key projects is carried out by the Chief Architect as a key advisor to the PDA. To carry out this responsibility, the Chief Architect will work with the DCIOs Architects and Project Managers and their Systems Engineers to ensure appropriate levels of architectural and programmatic integration as depicted below in Figure 7-1:

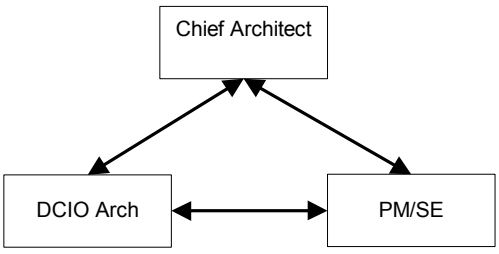


Figure 7-1: Risk Management Oversight Coordination

Through their respective reports and review activities , the CIO, and the Chief Architect will be able to identify what, if any, EA program expectations are not being met. For the EA Program there are two separate types of risks which will need to be addressed.

At the enterprise level for the One-VA effort, there is now the risk of various projects being dependent upon each other to be deployed. These risks must be identified in the various implementation and sequencing plans. The appropriation risk mitigation strategies will be incorporated into the yearly deployment implementation plans.

The second is at the individual executing projects; these will be addressed as part of the normal reviews. For example, if risk management has been effectively implemented, program risk lists should be regularly generated that assign a risk level based on impact and probability, define risk mitigation strategies, report on progress in implementing these strategies, and whether the progress being made is successfully addressing the risk item. Also, periodic configuration audits should be conducted to ensure that EA configuration items are being defined, controlled, and reported. The CIO and Chief Architect can also rely on independent reviews by the quality assurance function or a verification and validation agent to advise them of deviations from expectations.

These deviations may be program management plan-related, such as omission of work tasks, delays in the completion of work tasks, or additional costs to complete work tasks; or they may be management function-related, such as not following change control procedures, not adhering to the selected EA framework, or not engaging SMEs and domain owners within business and technical areas.

The process of identifying, allocating, managing and minimizing risk is crucial to the success of the project. The ability of the project management team to identify and understand various risks and then to implement tools and/or allocate resources to mitigate them will be a major factor in bringing the project in on time and within budget.

Accordingly, the risk management plan will identify risks and the appropriate methods for managing them. The tools, techniques, and procedures shown here will serve as a guideline for team members and stakeholders to deal with the uncertainties of risk.
The major steps that need to be performed to manage risk in the project are:

- Risk Identification
- Risk Assessment/Quantification
- Risk Allocation
- Risk Management.

7.2 Risk Identification

Identifying risk will occur in two phases: formal planning and ongoing identification. Once the goals, objectives, and preliminary schedule are set and the approach to meeting the need is approved, the Project Control Board (PCB) will study all aspects of the approach to identify any associated risks. Risk identification is a function of experience, historical knowledge, 'what if' scenarios, checklists, and any and all other applicable tools. The use of the PCB will provide an automated method of recording and tracking risks and make managing them simpler.

At the EA level program dependencies will be identified through the use of Integration Points (IPs). These IPs will provide the equivalent of a contractual understanding between various executing programs on the various resources, interfaces, or fundamental infrastructure dependencies required for the successful execution of programs in their different phases. As an example in an earlier milestone program, the critical dependencies might be software (and their requisite interfaces), however in a later program the dependencies could be deployed hardware/software/networks/security programs, etc in order for the program to be deployed.

7.3 Risk Assessment/Quantification

Once risks are identified by the various means, the risks need to be analyzed and quantified. The PCB, in association with subject matter experts, will assign probabilities and consequences of risk occurrence. Should the risks profiled turn out to be high impact but low probability, different strategies will be shaped accordingly. In a project environment, it is not feasible to manage all identified risks. As such, the PCB will prioritize the initial list and direct the project team to concentrate on the higher impact risks to ensure a manageable number for the resources available.
Suggested qualitative values for probabilities and impacts:

Probabilities	**Impacts**
- High (Very Likely)	- High
- Medium (Probable)	- Medium
- Low (Possible)	- Low

The following definitions of impact will be used for the risk management plan:

- High ¾ Any risk that in and of itself can cause at least an overall 10% slip in goal/functional requirement achievement or project baseline in the project.

- Medium ¾ Any risk that alone can impact the baseline of the project or cause a specific goal to be unattainable.

- Low ¾ Risks that do not meet the criteria for the above two categories.

7.4 Project Control Board (PCB) Evaluation

Once risks have been identified and quantified, the PCB will evaluate the risks judged to have program wide impact if they occur. Risk factors are the combination of the probability and the impact of the risk on the program. An adjustment to the plan can occur should the profile show that the bulk of identified risks have a high probability of occurrence but low impact on overall goals and schedules.

Figure 7-2 shows a risk factor matrix that will be used to generate risk profiles for planning purposes. The PCB will compile a "watch list" of those risks that if manifested and allowed to continue could stop the project in its tracks. This list will be reviewed formally on a weekly basis at the project status meetings.

Probability of Occurrence:			
High (Very Likely)	Medium	High	High
Medium (Probable)	Low	Medium	High
Low (Possible)	Low	Low	Medium
Program Impact	Low	Medium	High

Figure 7-2: Risk Factor Matrix

The PCB will monitor those risks in the dark shaded "high risk factor" areas more closely than others.

7.5 Risk Allocation

Once risks have been identified in the initial project planning phase, they will be assigned to appropriate persons, sections or teams for day to day monitoring and management. This step is crucial--incorrect assignment will undoubtedly lead to programmatic difficulties downstream. Once assigned a risk item, the person or organizations with the responsibility are the single point of contact for the item and thus become the 'owner' for risk management and accountability. If required, risk owners are expected and encouraged to examine and challenge the PCB's initial assessment of probabilities and impacts. The PCB will adjudicate any major disagreements and ensure owner's concerns are adequately addressed and integrated into overall project risk management strategies.

7.6 Risk Mitigation

Once assigned a risk, the owner should study it carefully, then draw up a mitigation plan for the assigned item. The PCB will aggregate the risks and analyze the combined strategies. The intent will be to identify strategies that are or could work at cross-purposes with each other or other strategies. Should the resources required to fully mitigate all risks exceed those available, the PCB must work to further refine risk probabilities and impacts and broker a tailored plan that will ensure the risks with the most potential for causing

failure are addressed and mitigated. The prioritization process will be useful in ensuring the number of strategies competing for resources will be manageable. Although the PCB will rely on risk owners of lower priority risks to manage them on a day to day basis, the PCB will continually monitor and spot check to ensure small risks do not suddenly become large ones. Where applicable, mitigation plans should be linked into the project schedule. This will greatly assist with impact analysis.

7.7 Ongoing Identification of Risk

As the project progresses, it is assumed that aspects of it will change and evolve. Requirements may be added or changed, unanticipated technical difficulties may arise and environmental factors may cause resources to become unavailable or inoperable for extended periods. As conditions change, the risks initially identified in the planning phase may be magnified or reduced or disappear altogether while others surface and are addressed. The management of risk will continue throughout the project life cycle and coincide with other project control processes. The Risk Control Form (see appendices) can be used to capture emerging risks for PTS input. The completed form is then forwarded to the PCB for review and action. During weekly status meetings, emerging risks will be reviewed, an owner assigned, impact and probability assessments performed and mitigation strategies selected.

1. Measure user expectations and satisfaction at each level in the organization.

Appendix A – Milestone Decision Briefings Project Manager's Checklist

These are sample checklists still to be finalized for final

PLEASE ANSWER THE FOLLOWING QUESTIONS*:	***Yes/No***		***N/A***	***Approval Date***
A. Is this a Milestone briefing and do you have a program Quad Chart?				
B. Requirements & Existing Capabilities				
1 Have the Requirements been re-validated just prior to this milestone?				
2 Do the system capabilities meet the documented Requirements?				
C. Do you have any Key Unresolved Issues to report? *(Congressional Issues/Requirements Issues/Legal Issues/Security Issues/GAO / OMB Issues)*				
D. Has the Acquisition Strategy been re-validated since the last milestone?				
1 Have you used incentives to reduce development, procurement, & support costs?				
2 Have you identified your Cost-as-an-Independent Variable inflection points?				
3 Have you implemented any cost-performance tradeoffs?				
4 Have you ensured that VA Enterprise Architecture compliance is being achieved?				
5 Have environmental, safety, and health acquisition issues been addressed?				
6 Have you developed an acquisition strategy & contracting approach towards procuring IT?				
7 Have you Completed a Small Business Innovative Research (SBIR) Program Plan?				
a. *Have you attempted to stimulate technological innovation by small business?*				
b. *Have you attempted to increase small business participation in meeting federal research and development needs?*				
c. *Have you attempted to increase the commercialization of technology developed through SBIR research and development?*				
d. *Have you attempted to enhance outreach efforts to increase the participation of socially and economically disadvantaged small business concerns and the participation of small businesses that are at least 51 percent owned and controlled by women?*				

- If you provided a "No" or "N/A" answer to any question, please provide justification within the backup portion of this briefing.

PLEASE ANSWER THE FOLLOWING QUESTIONS*:	***Yes/No***		***N/A***	***Approval Date***
D. Has the Acquisition Strategy been re-validated since the last milestone?				
8 Does the program continue to meet your Organizational Improvement goals?				
9 Does the program deviate from VA Technical Architecture standards?				
10 Does the program have the capability to interoperate with other VA and external systems?				
11 Is there any non-compliance with VA security standards?				
12 Is the program on track to achieve Security Certification and Accreditation?				
13 Have there been any material changes in Customer Acceptance selection factors? (experience with technology, organizational support, ease of use)				
14 Have there been any material changes in the Customer Service selection factors? (Quality, Waiting Time, Increase in Customers, Increased Benefits, Existing Customer access)				
15 Have there been any material changes in the Return on Taxpayer Investment cost / benefit analysis or non-quantifiable benefits?				
16 Have there been any material changes in High Performing Workforce factors (recruiting and retention, training and development, and morale?)				
17 Have there been any material changes in VA Strategic Alignment factors (Quality of life, ensure smooth transition, Honor and Memorialize, Public Health and Socioeconomic well being, One VA)				

- If you provided a "No" or "N/A" answer to any question, please provide justification within the backup portion of this briefing.

PLEASE ANSWER THE FOLLOWING QUESTIONS:*	*Yes/No*		*N/A*	*Approval Date*
E Program Execution Status. (Milestones 0, 1, 2, & 3):				
1 *Have Exit Criteria - established during the last Decision Briefing - been satisfied?*				
2 *Does the program meet **Cost** Goals and Thresholds?*				
3 *Does the program meet **Schedule** Goals and Thresholds?*				
4 *Does the program meet **Performance and Reliability** Goals and Thresholds?*				
5 *Has testing been accomplished and approvals been obtained?*				
6 *Is the program affordable? (i.e., current funding vs. FY outyears?)*				
7 *Is program life-cycle configuration management and testing support in place?*				
8 *Have you developed your Total Cost of Ownership (TCO) reduction objectives?*				
9 *Have you prepared and/or updated the system's TCO Reduction Plan?*				
10 *Have you maximized the use of commercial & non-developmental items?*				
11 *Has the Analysis of Alternatives been updated & reviewed since Milestone 1?*				
12 *Have you evaluated your program for other agency joint participation potential?*				
13 *Have you developed performance measures (metrics) for the IT in your program?*				
14 *Has an independent Cost Estimate been performed?*				
15 *Has a program Cost Estimate been performed and revalidated since the last Milestone?*				
16 *Have you discussed all critical design, test, performance, and security issues with the CIO staff – Chief Architect, Director of Cyber Security, DBA, Networks, AAC, others?*				
17 *Have you completed and revalidated a cost, schedule, and performance risk management plan?*				

- If you provided a "No" or "N/A" answer to any question, please provide justification within the backup portion of this briefing.

PLEASE ANSWER THE FOLLOWING QUESTIONS*:	***Yes/No***		***N/A***	***Approval Date***
F. Has the program met IT statutory requirements (ITMRA, GPRA, PRA)				
1 *Has a Process Analysis or Re-engineering effort been performed?*				
2 *Does this program meet the specific measures of the VA Performance Plan?*				
3 *Can you provide examples of how your program has contributed to achieving the goals and objectives of the VA IT Strategic Plan?*				
4 *Have the "Three Pesky Questions" been addressed?*				
5 *Have you normalized your data architecture to accomplish interoperability with other VA and other agency applications?*				
6 *Have you used shared computing platforms or commercial computing resources?*				
7 *Have you taken advantage of VA data networks?*				
8 *Have you developed a threat analysis and planned an application and physical security protection strategy?*				
9 *Have you developed a threat analysis and planned a cyber security protection strategy?*				
10 *Have you developed a Deployment Strategy?*				
11 *Have you compared (benchmarked) these processes to those in other public or private organizations? (Business Process Reengineering / Benchmarking)*				
12 *Is your system Year 2000 Compliant?*				
13 *Have you considered Re-using or modifying existing software for your program?*				
14 *Does your design consider electromagnetic environmental effects (E3) and Spectrum Management?*				
15 *Does your design avoid / isolate custom designed components? (Open Systems)*				
16 *Will your system have fully tested pilots, simulation, or prototypes before production Deployment? (Test & Evaluation)*				

- If you provided a "No" or "N/A" answer to any question, please provide justification within the backup portion of this briefing.

PLEASE ANSWER THE FOLLOWING QUESTIONS*:	***Yes/No***		***N/A***	***Approval Date***
F. Continued . . . IT statutory requirements				
17 *Are there clearly established measures and accountability for program progress?*				
18 *Does the Acquisition Strategy allocate risk between VA and the Contractor? (Contract Risk Management)*				
19 *Does the Acquisition Strategy effectively use Competition? (Competition)*				
20 *Are contract payments tied to accomplishments / deliverables?*				
G. Net Overall Risk Assessment				
Is the Net Overall Risk Assessment Low?				
H. Recommendations (Milestones 1, 2, and 3 only)				
1 *Have you prepared Exit Criteria for the next Phase?*				
2 *Do both the PM and Assistant Secretary recommend milestone approval?*				
3 *Has the Decision Memorandum been written and is it ready for signature during the Decision Briefing?*				

- If you provided a "No" or "N/A" answer to any question, please provide justification within the backup portion of this briefing.

Appendix B – Milestone Decision Briefings Template

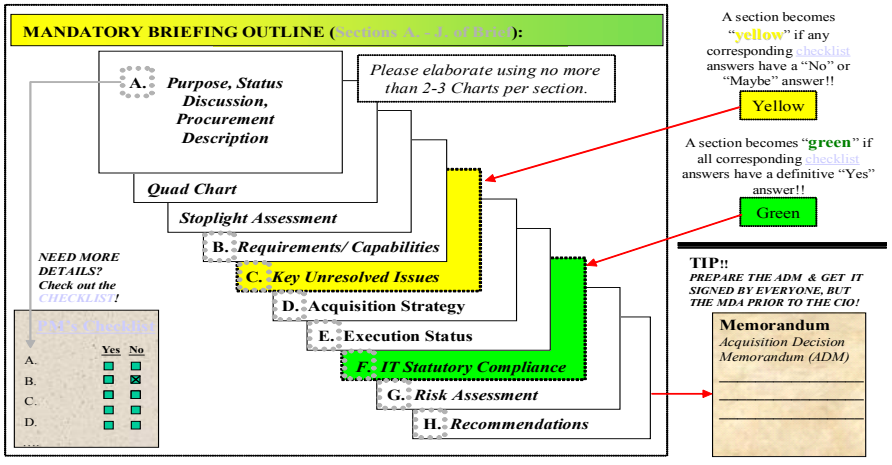
MILESTONE *DECISION BRIEFINGS*
- BRIEFING TEMPLATE -

HOME

Milestone/Status
Briefing Template

Give presentations that tell stories, not just provide data

MILESTONE *DECISION BRIEFINGS*



***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

Briefing Title / Purpose

(e.g., Milestone 3 - Program Decision Briefing)

Program Name
(VA designation)

Project Manager information
(Names, Phone, eMail, etc.)

Don't forget Dates on every page! Don't forget Page Numbers on every page!

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

Statement of Requirements

Please discuss your accomplishments to date, major successes, obstacles overcome, traumatic events, tradeoffs, etc.

Keep comments brief

List each item as a bullet and talk to it

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

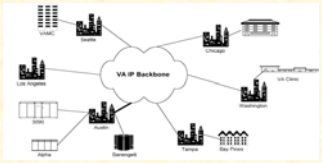
System Description

Briefing Section A

Please illustrate the <u>exact</u> system this decision will authorize you to implement…

VA Data Network

Design and implement a high bandwidth communications network to support transmission of all voice, data, text, graphics, radiology and other images, and full-motion video to all VA locations



(Include a schematic or illustration to help the audience.)

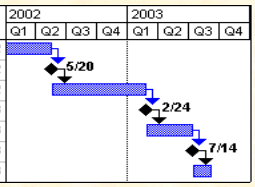
XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

Program Schedule and Cost

Briefing Section A

Task Name	Duration	Start
System Definition	100 days	1/1/02
Milestone 2	0 days	5/20/02
Development and Testing	200 days	5/21/02
Milestone 3	0 days	2/24/03
Production Implementation	100 days	2/25/03
Milestone 4	0 days	7/14/03
Post Implementation Review	40 days	7/15/03



Step	Quarter 1 - FY02	2 - FY02	3 - FY02	4 - FY02	1 - FY03	2 - FY03	3 - FY03	Totals
System Definition	$ 750	$ 1,500	$ -	$ -	$ -	$ -	$ -	$ 1,500
Development and Testing	$ -	$ -	$ 3,000	$ 3,000	$ 1,500	$ -	$ -	$ 7,500
Production Implementation	$ -	$ -	$ -	$ -	$ 1,500	$ 2,500	$ 1,000	$ 4,000
Post Implementation Review	$ -	$ -	$ -	$ -	$ -	$ 100	$ 250	$ 100
Totals	$ 750	$ 1,500	$ 3,000	$ 3,000	$ 3,000	$ 2,600	$ 1,250	$ 13,100

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

Existing Capabilities

Briefing Section B

Please discuss methods used to re-validate the Requirements since the last milestone.

Discuss any capability shortfalls / tradeoffs you've made to maintain your Scope, Cost, Schedule, Performance, or Reliability goal and threshold objectives.

Discuss whether or not the systems capabilities still meet VA requirements.

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

Key Unresolved Issues

Briefing Section C

Lets face it… all programs have issues to be dealt with, however please understand that this is not the forum used to solve them. In this meeting simply discuss the pros & cons of any "Key Unresolved Issues" that may come up in the future adding risk to the execution status..

(I.E. Potential Showstoppers!)

Ex.. Congressional Issues, Administration Issues, Vendor Issues, Legal Issues, GAO / OMB Issues, Requirements Issues, etc.

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

Acquisition Strategy

Briefing Section D

Briefly discuss your Acquisition Strategy

Using bullets as place holders, please discuss verbally how you re-validated the Acquisition Strategy since the last MS, and if you didn't revalidate it, then please explain why you did not?

Also verbally discuss how you used incentives, cost-performance tradeoffs, CAIV objectives, environmental considerations, IT contracting approach, SBIR/Small business/Socially & economically handicapped program, & commercialization of technology.

(Don't forget to provide Back-up Materials to justify "No" answers on the PMs Checklist!!)

PM Checklist Back-up Materials

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

Program Execution Status

Briefing Section E

Briefly discuss your Execution Status

Using bullets as place holders, please discuss verbally how closely you've met your scope, cost, schedule, performance, and reliability thresholds. Please discuss your test results, user reactions, and inspection results. Do you believe the system is still affordable? Why?
How have you ensured that configuration management and support staffing / maintenance will be in place to maintain the system over its planned life?
How will you achieve annual Total Cost of Ownership reduction goals?

Discuss your search for Joint Agency program potential. What partnership opportunities with Federal and State agencies did you evaluate? What other systems did you evaluate and why weren't they chosen? Discuss the IT performance metrics you will use. Are there any critical design, development, data interoperability, test, training, rollout, and/or support issues?

(Don't forget to provide Back-up Materials to justify "No" answers on the PM Checklist!!)

PM Checklist Back-up Materials

XX/XX/XX

MILESTONE *DECISION BRIEFINGS*
- BRIEFING TEMPLATE -

Briefing Section E

Life Cycle Funding Discussion

APPROPRIATION	*YR1*	*YR2*	*YR3*	*YR4*	*YR5*	*TOTAL*
Capital Investment - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
Operations & Maintenance - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
Other Procurement - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
TOTAL (CI+OM+OP) - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						

Using chart please summarize your Life Cycle Funding Profile

The intent is for the PM to explain shortfalls between his/her appropriated/ allocated funds and the cost to execute the program to meet the operational requirement. The PM should discuss changes and challenges in executing the program due to the shortfall.

The Funding (CI, OM, OP) is the appropriated/ allocated funds.

The Requirement is the total system life cycle estimated cost at system retirement.

The Cost Variance is the difference between Funding and Requirements.

XX/XX/XX

MILESTONE *DECISION BRIEFINGS*

Briefing Section G

Capital Investment Funding Discussion

APPROPRIATION	*YR1*	*YR2*	*YR3*	*YR4*	*YR5*	*TOTAL*
Hardware - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
Software - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
Services - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						
TOTAL (H+Soft+Serv) - Quantity - Funding ($) - Requirement ($) - Cost Variance ($ +/-)						

Using chart please summarize your Capital Investment Funding Profile

nding

equirement

The Cost Variance is the difference between Funding and Requirements

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

IT Statutory Compliance

Briefing Section F

Briefly discuss your IT Procurement Methods

Using bullets as place holders, please **verbally discuss** each of the following**:** How you performed your alternatives analysis; how your program meets the goals & objectives of the VA IT Strategic Plan, How your program complies with the VA Enterprise Architecture; your threat analysis and security protection strategies for application, physical, and cyber security; how you performed your vendor selection analysis; your efforts to support our VA administrations; your ROI results, your justification for not using COTS items; your Y2K efforts; your efforts to re-use or modify existing VA or other federal agency software for use in your program; your established performance measures and accountability for program progress with your vendors (Discuss how these measures are linked to strategic goals, the APB, and CAIV objectives!).

(Remember you will need back-up materials to justify any "No" answers on the PM's Checklist!!)

PM Checklist Back-up Materials

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

Risk Assessment

Briefing Section G

Briefly discuss your Risk Assessment Methodology

Please identify significant risk events which may cause a schedule, cost, scope, performance, or reliability deviation from the Goals and Thresholds (chart Likelihood Vs. Consequence for each and one overall). Please illustrate any qualitative and quantitative techniques used in determining your programs risk assessment. Explain your efforts used to mitigate significant risk events such as (Handling, Control, Avoid, Assume, Transfer). What are your risk management goals and objectives? Are you using the Risk Management Process (Identify, Analyze, Plan, Monitor, Control)?

(Don't forget to provide Back-up Materials to justify "No" answers on the PMs Checklist!!)

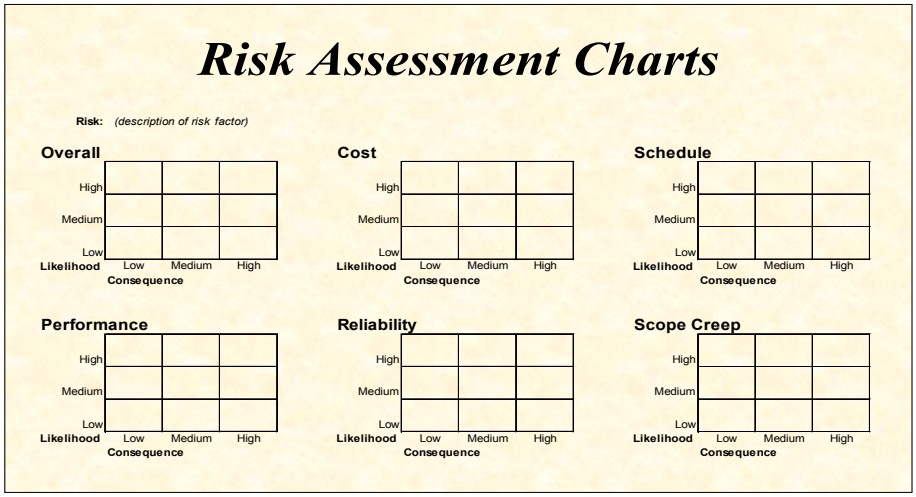
PM Checklist Back-up Materials

XX/XX/XX

***MILESTONE** DECISION BRIEFINGS*

- BRIEFING TEMPLATE -

Briefing Section G



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***MILESTONE** DECISION BRIEFINGS*

HOME

Recommendations

Briefing Section H

Briefly discuss your recommendations

Using bullets as place holders, please discuss verbally the reasons why you recommend either continuation or cancellation of this program.

(Provide the chopped Decision Memorandum to the decision authority for final signature.)

XX/XX/XX

Appendix C – Information Technology Reviews

Milestone 0 – Project Initiation Approval

Tasks for the Project Initiation Approval include the following:

1. Prepare a One Page Mission Statement for IT Board review
    a. Document what problem you are solving
    b. Describe the technical approach
2. Complete a first pass at completing/updating the top row of the Zachman Framework
3. Name an assigned project manager
4. Estimate an order of magnitude elapsed project duration
5. Describe the acquisition strategy concept COTS, partner, build, other
6. Describe proposed work distribution VA, industry, other government agencies
7. List critical success factors
8. List Major Tasks
9. Map the project concept to VA Performance Goals
10. Estimate order of magnitude life cycle costs
11. Document Next Steps studies, analysis, meetings, reviews

Milestone I – Prototype Development Approval

Tasks for the Prototype Development Approval include the following:

1. Prepare a Concept Definition document that includes a high level evaluation of alternatives
2. Complete/Update Rows 2 and 3 of the Zachman Framework Conceptual and Logical models
3. Review project concept with the Enterprise Architecture team for initial compliance with the VA Enterprise Architecture
4. Prepare an initial change management and communications plan
5. Prepare a project organization plan and staffing inventory
6. Update mapping of the project concept to VA Performance Goals
7. Prepare an abbreviated Capital Investment Plan (CIP) including Return On Investment and Cost Benefit Analysis estimates
8. Prepare a prototype development work plan and staffing schedule
9. Review CIP with Strategic Management Council and Capital Investment Board
10. If approved by SMC and CIB, refine the abbreviated CIP and provide more detail in a 300B exhibit
11. Prepare for CIB, SMC, OMB, and Congressional review to determine if the proposed project will be included in the VA Enterprise Architecture Sequencing Plan

Milestone II – System Development Approval

Tasks for the System Development Approval include the following:

1. Develop a system prototype if appropriate
2. Evaluate COTS software if appropriate
3. Review the results of the User view of the prototype – changes / lessons learned
4. Update the project description with a final concept of operations and fielding strategy
5. Refine and freeze the functional, security, performance, and reliability requirements
6. Document tasks and effort required to obtain Security Certification
7. Complete the detailed system design
8. Complete/Update the Technical Design (row 4) of the Zachman Framework, and review the detailed systems design with the Enterprise Architecture team for Enterprise Architecture compliance at levels 1 – 4 of the Zachman Framework
9. Update the Risk profile and mitigation plan
10. Develop a Change/Configuration Management strategy and Contingency Budget based upon the Risk profile
11. Prepare/Maintain a future release schedule – functionality by release
12. Update the implementation cost and schedule for release 1
13. Prepare an integrated system logistics support plan
14. Update the life cycle cost and resource requirements
15. Update the mapping of the project functions and features to VA Performance Goals
16. Prepare a change management and communications strategy and plan – Internal IT staff, Business Unit staff, other stakeholders
17. Update the project organization and staffing plan – IT staff, Vendor staff, Business Unit staff, other Stakeholders
18. Document the Scope, Schedule, Cost, Performance, and Reliability goals and threshold bands
19. Design system operation Performance, Reliability, and Total Cost of Ownership metrics processes and reporting formats
20. Validate a continuing positive Return On Investment and Cost Benefit Analysis

Milestone III – System Deployment Approval

Tasks for the System Deployment Approval include the following:

1. Execute the change management and communications plan
2. Complete documentation of test cycles, conditions, data, and expected results and set up test models
3. Implement the detailed system design – COTS software configuration and/or custom coding as required

4. Prepare/configure user training schedules and materials
5. Prepare/configure user documentation and help files
6. Prepare/configure operations and business continuity documentation and help files
7. Implement / integrate collection and reporting of Security, Performance, Reliability, and Total Cost of Ownership metrics
8. Perform application unit, string, interface, and system testing
9. Perform prototype/pilot user acceptance testing
10. Perform reliability, performance, and stress testing
11. Obtain Security Certification
12. Perform conversion testing
13. Perform business continuity testing
14. Update the Risk Profile and Mitigation Plan
15. Update the Rollout cost, Schedule, and Resource Requirements plan
16. Update the Total Cost of Ownership operations, maintenance, and on-going training cost and staffing estimates
17. Update the Return On Investment and Cost Benefit Analysis
18. Update the As-Built and Sustainment and Metrics Rows (rows 5 and 6) of the Zachman framework and obtain Enterprise Architecture compliance approval
19. Update the future release schedule

Milestone IV – Post Implementation Review

Tasks for the Post Implementation Review include the following:

2. Execute the Change Management and Communications plan
3. Conduct conversion and production training and pilot tests
4. Deploy the system
5. Review the conversion experience and system functional and technical performance
6. Tally and categorize post-conversion bug reports compared to bugs identified during design, development, and testing to generate a defect removal efficiency metric
7. Identify reliability and performance results that exceed expected thresholds
8. Measure user expectations and satisfaction at each level in the organization
9. Review the results and effectiveness of the Change Management and Communications plan
10. Review the initial Risk Profile and Mitigation plan and compare to actual project experience
11. Review planned and actual project scope and functionality delivered
12. Review planned and actual cost and schedule results
13. Review planned and actual reliability and performance results
14. Compare planned and actual business case results, and document planned and actual Return on Investment results

15. Perform root cause analysis for shortfalls in scope, cost, schedule, performance, and reliability
16. Document risks unidentified at the start of the project that presented challenges (what did you not know that you did not know)
17. Document "lessons learned" from known and unknown risk factors
18. Identify team skill and resource shortfalls and "lessons learned"
19. Refine estimating parameters and factors based upon actual project results
20. Prepare for and conduct the Milestone 4 – Post Implementation Review Milestone Decision Briefing
21. Update the VA project knowledge repository (VHA Virtual Learning Center) as appropriate